

41

LIBRARY
UNIVERSITY OF
CHICAGO

TRAITÉ
THÉORIQUE ET PRATIQUE
DE
LA MÉTALLURGIE DU FER

A L'USAGE
DES SAVANTS, DES INGÉNIEURS, DES FABRICANTS
ET DES ÉLÈVES DES ÉCOLES SPÉCIALES,

COMPRENANT
LES FABRICATIONS DE LA FONTE, DU FER, DE L'ACIER ET DU FER BLANC,
ET PRÉCÉDÉ D'UNE INTRODUCTION
CONCERNANT LES PRINCIPES SUR LESQUELS REPOSE CETTE INDUSTRIE ;

PAR
C. E. JULLIEN,

INGÉNIEUR,

ancien élève de l'école centrale des arts et manufactures, ex-ingénieur de l'atelier de construction du Creusot,
du chemin de fer de Paris à Lyon, des forges de Montataire et des aciéries
H. Petit, Gaudet et Comp. de Rive-de-Gier.

ATLAS.

PARIS ET LIÈGE,
E. NOBLET, LIBRAIRE-ÉDITEUR.

1861

CONS
TN
703
J85
1861

PARIS. — IMPRIMERIE DE MADAME VEUVE BOUCHARD-HUZARD,
RUE DE L'ÉPERON, 5.

TABLE DES PLANCHES.

- PLANCHE I. — Four d'essai des minerais; bocards et patouillets.
- PLANCHE II. — Grillage des minerais.
- PLANCHE III. — Carbonisation des bois; lavage de la houille.
- PLANCHE IV. — Lavage de la houille, appareil *Bérard*.
- PLANCHE V. — Carbonisation de la houille.
- PLANCHE VI. — Carbonisation de la houille, système *Appolt*.
- PLANCHE VII. — Carbonisation de la houille, système *Knab*.
- PLANCHE VIII. — Carbonisation de la houille, système *Knab*.
- PLANCHE IX. — Trompe; ventilateur.
- PLANCHE X. — Ventilateur à haute pression, système *E. Bourdon*.
- PLANCHE XI. — Ventilateur *Mazeline*; soufflerie à piston et clapets.
- PLANCHE XII. — Soufflerie à piston et clapets, à deux cylindres.
- PLANCHE XIII. — Soufflerie à piston et tiroir, système *Thomas et Laurens*.
- PLANCHE XIV. — Régulateur à vent; appareil à chauffer l'air, système *Calder*.
- PLANCHE XV. — Chauffage de l'air, système *Thomas et Laurens*.
- PLANCHE XVI. — Hauts fourneaux.
- PLANCHE XVII. — Profils de hauts fourneaux.
- PLANCHE XVIII. — Disposition d'une usine de deux hauts fourneaux au coke; systèmes de courbure des parois extérieures.
- PLANCHE XIX. — Prises de gaz des hauts fourneaux, système *Thomas et Laurens*.
- PLANCHE XX. — Utilisation du gaz des hauts fourneaux au chauffage des chaudières à vapeur, système *Thomas et Laurens*.
- PLANCHE XXI. — Monte-charges hydraulique, système *Thomas et Laurens*.
- PLANCHE XXII. — Foyer et marteau catalans.
- PLANCHE XXIII. — Affinage de la fonte au feu soufflé et au charbon de bois.
- PLANCHE XXIV. — Utilisation de la chaleur perdue des feux d'affinerie au chauffage des chaudières à vapeur, système *C. E. Jullien*.
- PLANCHE XXV. — Affinage de la fonte; fours de fusion, de mazéage et de puddlage.
- PLANCHE XXVI. — Affinage de la fonte au four à réverbère dit *four bouillant*, à une porte de travail.
- PLANCHE XXVII. — Affinage de la fonte au four à réverbère dit *four bouillant*, à deux portes de travail.
- PLANCHE XXVIII. — Appareils de cinglage.
- PLANCHE XXIX. — Cisaille; table de lopineur; four à souder le fer.
- PLANCHE XXX. — Cylindres ébaucheurs; tracé de cannelures; profils de cornières.
- PLANCHE XXXI. — Profils de cornières.
- PLANCHE XXXII. — Profils de fers à vitrages et fers en T.
- PLANCHE XXXIII. — Profils de fers en double T.
- PLANCHE XXXIV. — Trains de laminoirs à fer en barres, gros mill et petit mill.
- PLANCHE XXXV. — Laminoir de fenderie; profil de couverture pour paquets et lopins; assortiment de tréfiles.
- PLANCHE XXXVI. — Fours à rallonger la tôle; plaques à dresser les grosses tôles.
- PLANCHE XXXVII. — Détails de cages de laminoirs à tôle et à fer en barres.
- PLANCHE XXXVIII. — Boîte et four à recuire les tôles en vases clos; laminage du *clinqant*.
- PLANCHE XXXIX. — Utilisation de la chaleur perdue des fours à réverbère au chauffage des chaudières à vapeur; chaudières horizontales.
- PLANCHE XL. — *Id. id.*; chaudières verticales.
- PLANCHE XLI. — Machine à vapeur horizontale pour laminoirs.
- PLANCHE XLII. — Pompe à eau froide, système *Warrall, Middleton et Elwell*.
- PLANCHE XLIII. — Alimentation des chaudières à vapeur; petit cheval à deux pistons, système *E. Bourdon*.
- PLANCHE XLIV. — *Id. id.*; petit cheval à un piston, système *E. Bourdon*; injecteur *Giffard*.
- PLANCHE XLV. — Caisses et fours à cémenter le fer.
- PLANCHE XLVI. — Fabrication des creusets; four de fusion de l'acier au coke.
- PLANCHE XLVII. — Fonderie d'acier à la flamme de la houille, systèmes *Bouché et C. E. Jullien*.
- PLANCHE XLVIII. — Fours de fusion de l'acier à la flamme de la houille, système *Ballefin*.
- PLANCHE XLIX. — Détails de fonderie d'acier, de corroyage et de fer blanc.
- PLANCHE L. — Martinets à cames et à rotation, systèmes *Décoster et Schmerber*.
- PLANCHE LI. — Martinet à cames et à rotation, système *Farcot*.



Fig. 40.

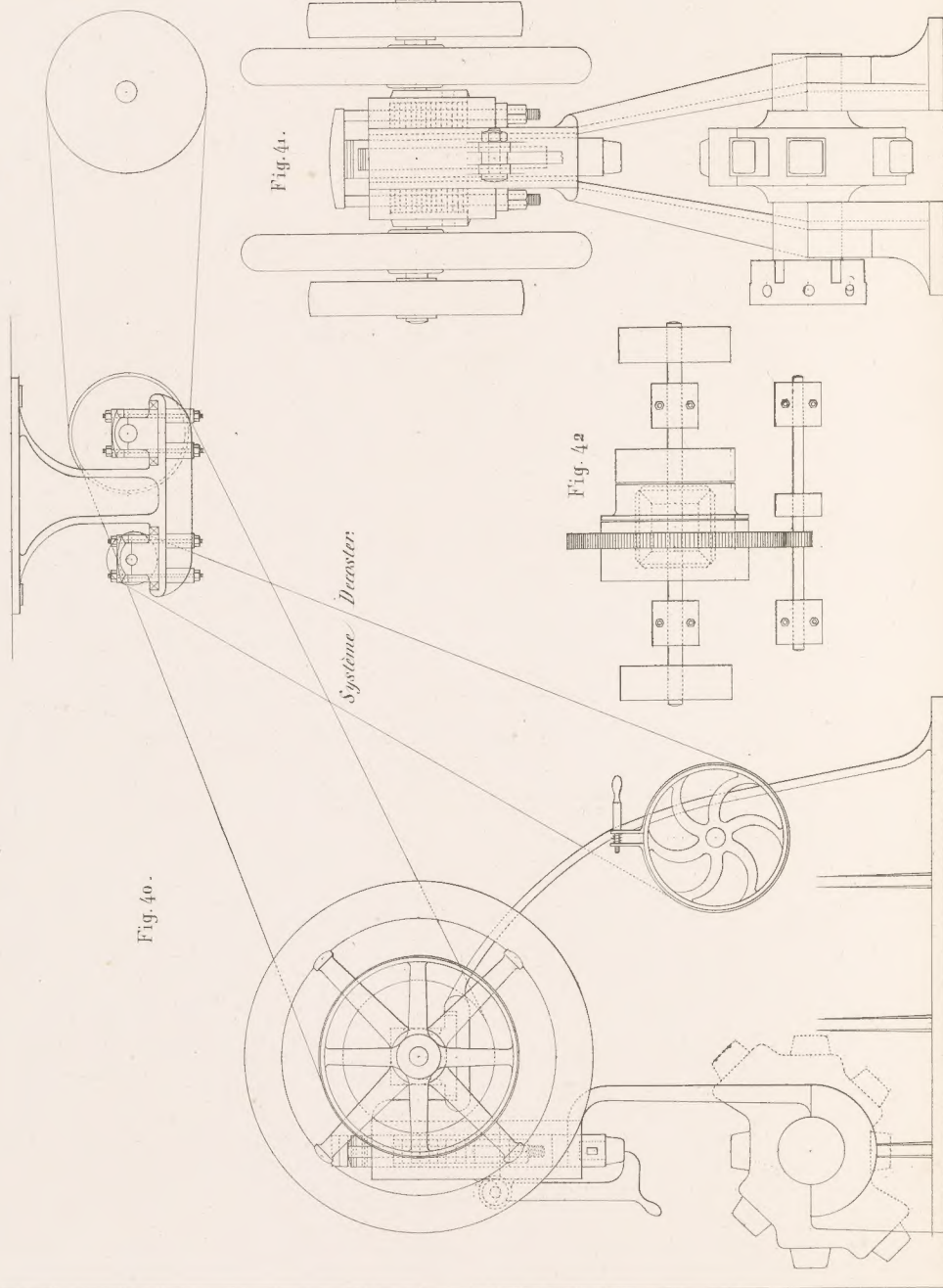
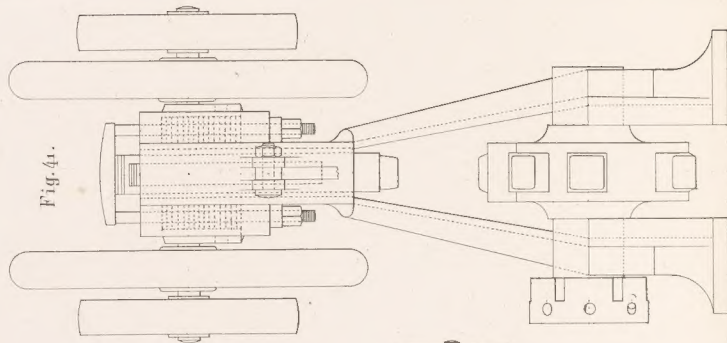


Fig. 41.

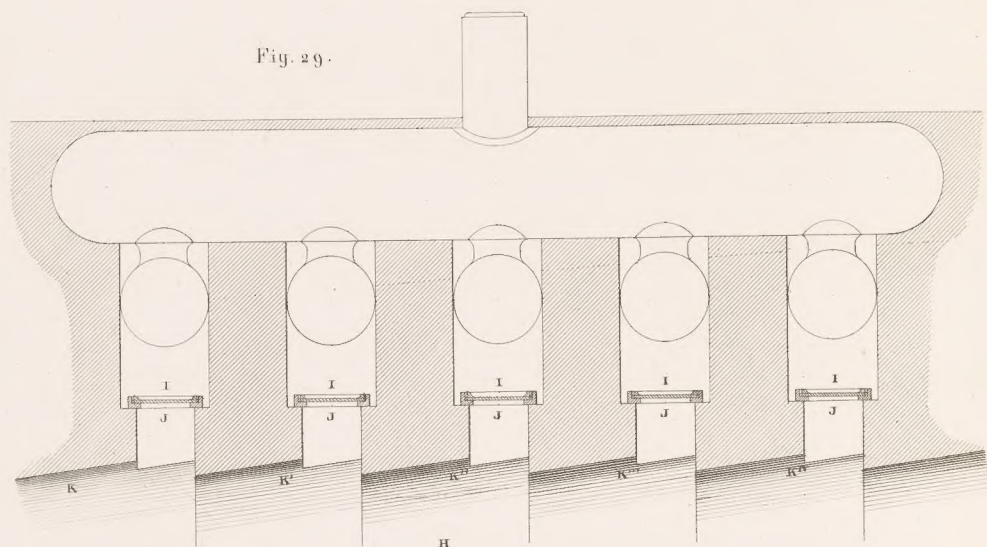


90-B-4488

THE GETTY CENTER
LIBRARY



Fig. 29.



Echelle = 1/50.

Fig. 32.

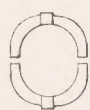


Fig. 31.

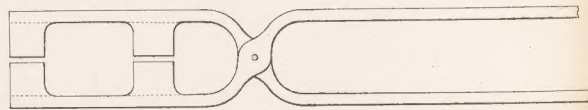


Fig. 30.

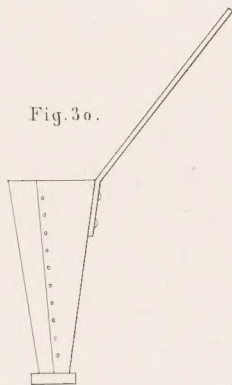


Fig. 33.

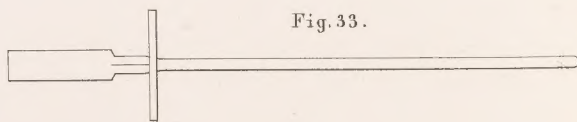


Fig. 34.

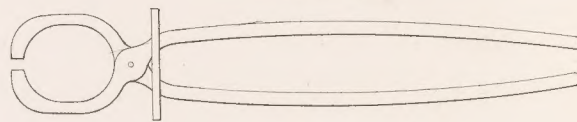


Fig. 42.

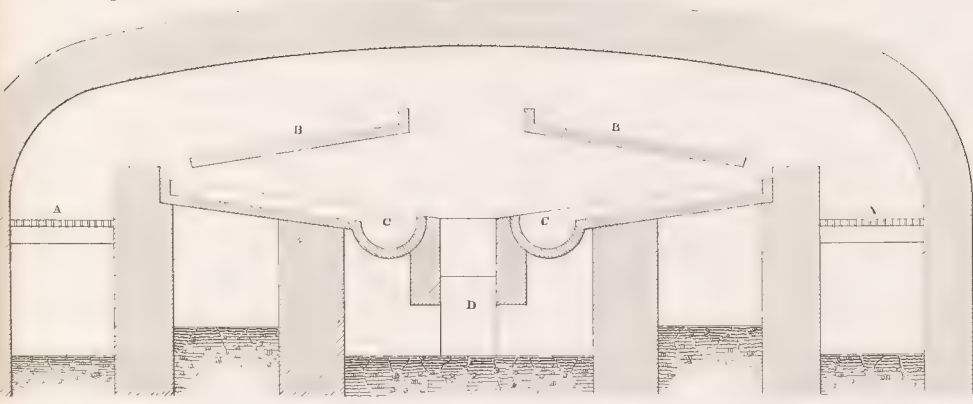


Fig. 41.

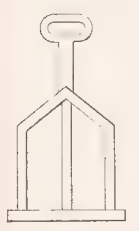


Fig. 40.

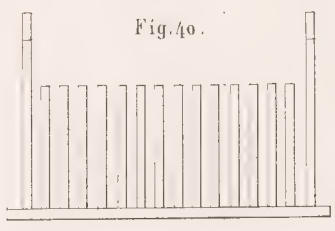


Fig. 38.

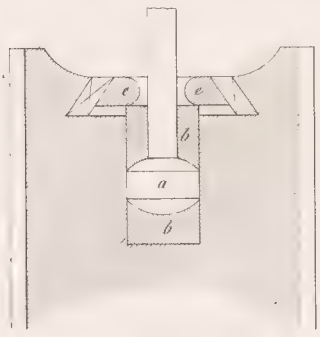


Fig. 39.

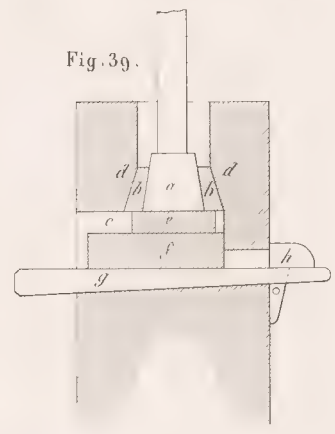


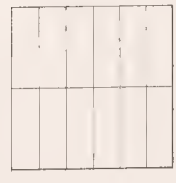
Fig. 35.



Fig. 36.



Fig. 37.



90-B-4478

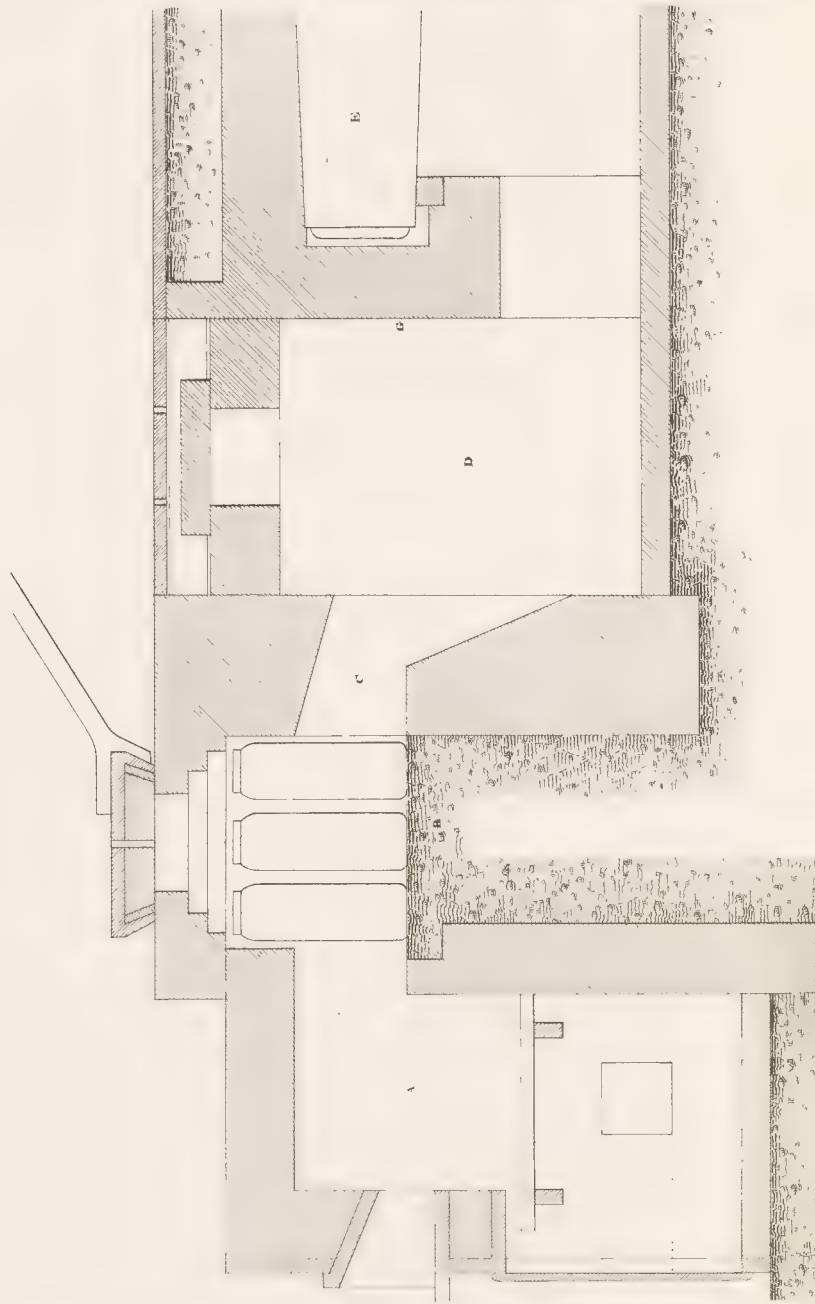
THE GETTY CENTER
Library



Acier.

Système Bouché.

Fig. 26.



Système Balçin.

Fig. 28.

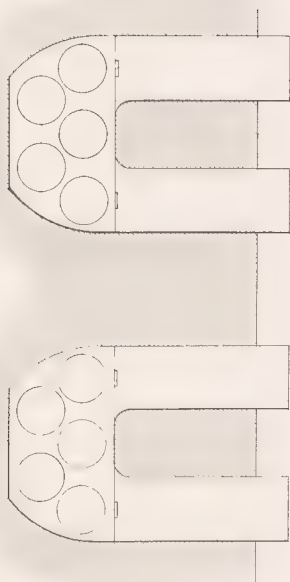
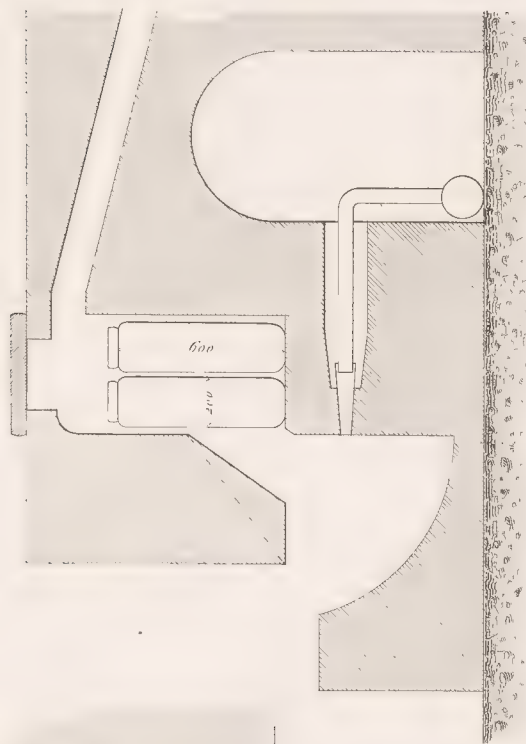


Fig. 27-



90-8-4488

THE GETTY CENTER
LIBRARY

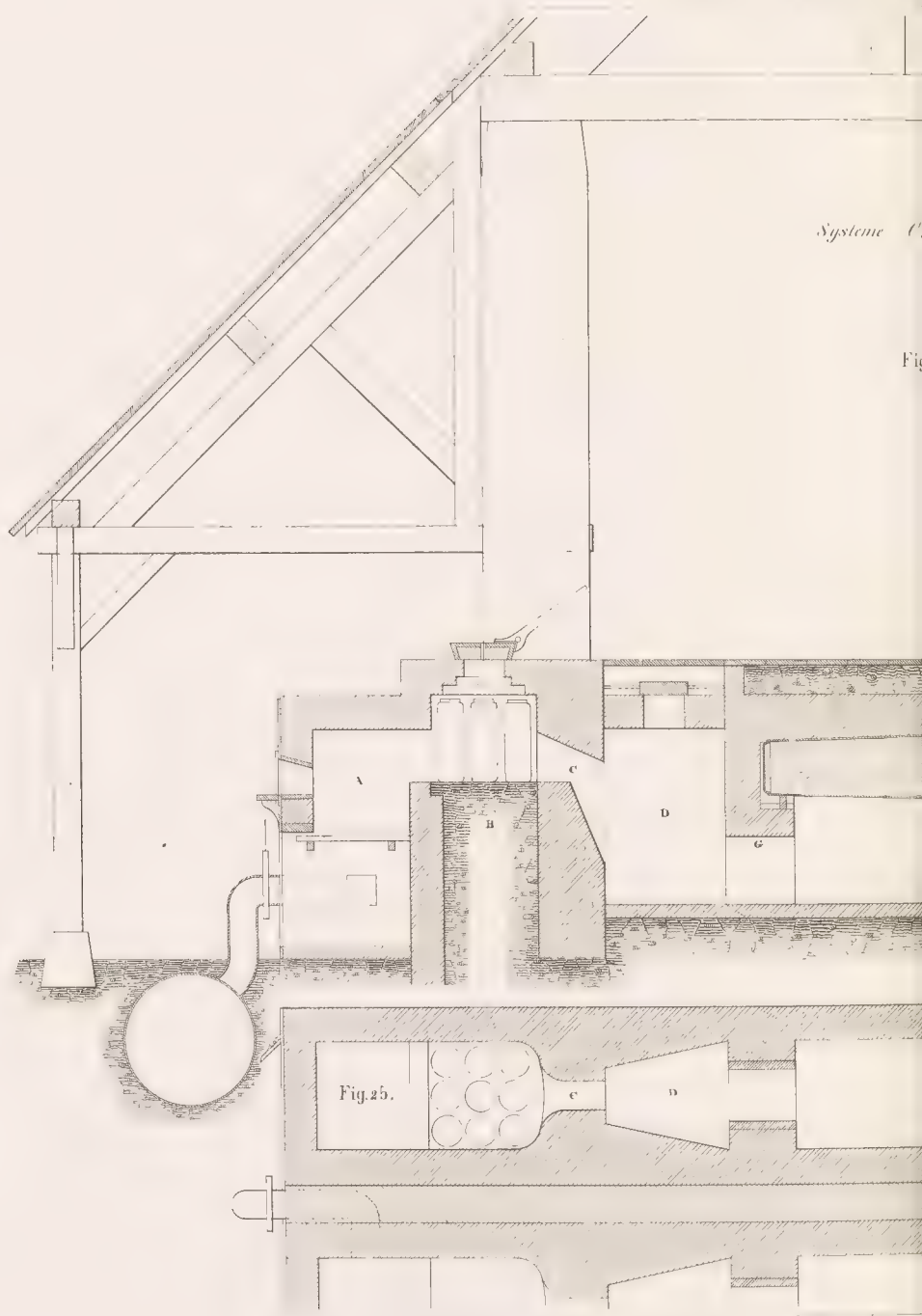


Acier.

FOUNDERIE D'ACIER A LA

Systeme C

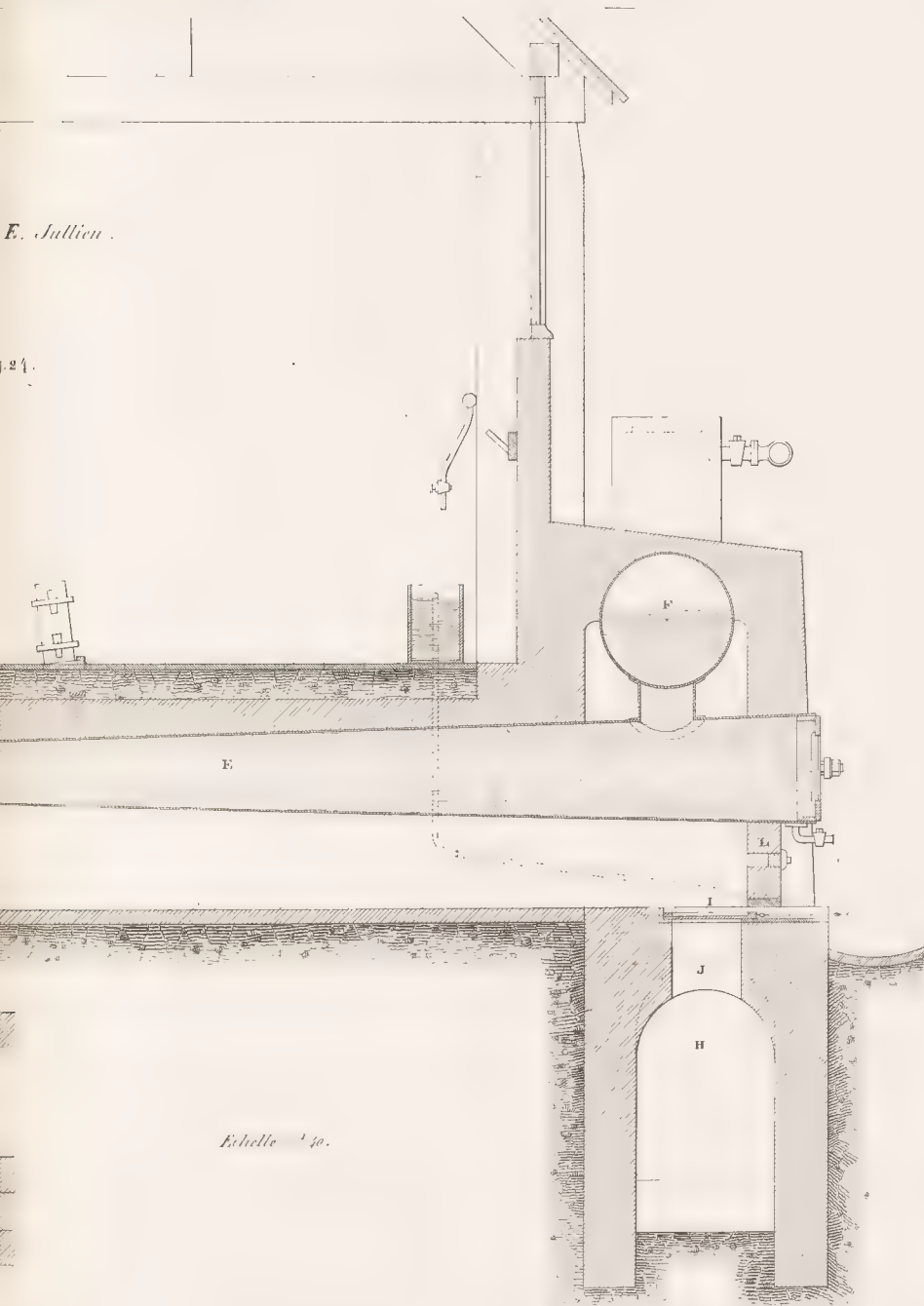
Fig



Flabls et imp.

E. Sallien.

24.

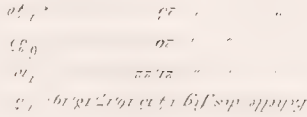


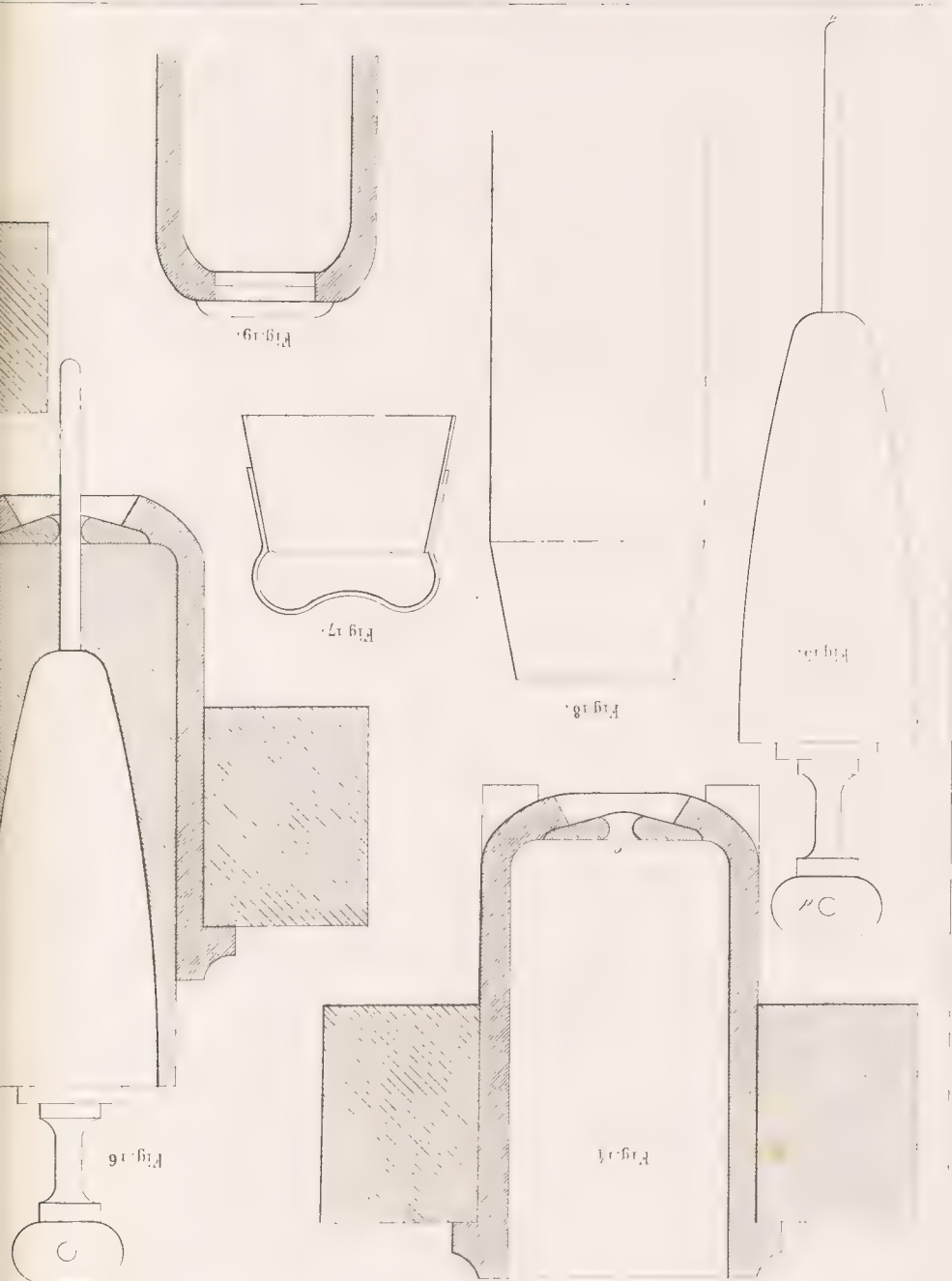
Echelle 1/40.

90-6-4488

THE CITY OF
LIBRARY



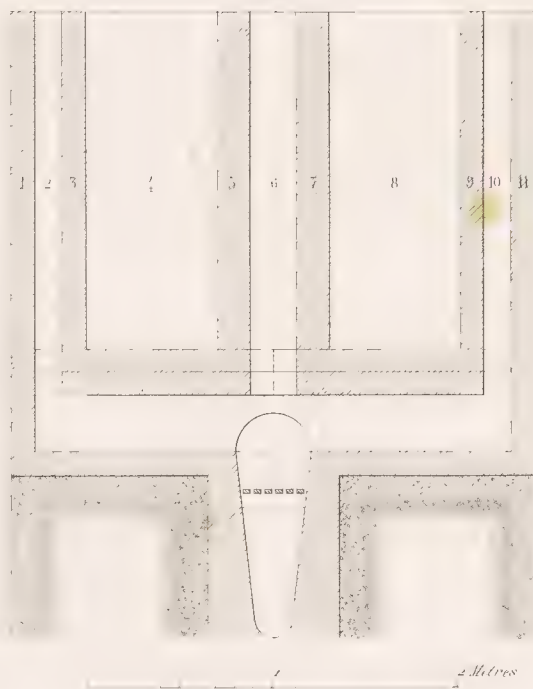




90-B-4478

THE
LIBRARY

Fig 1



Coupe suivant AB Fig 2

Elevation

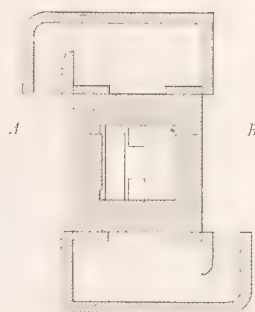
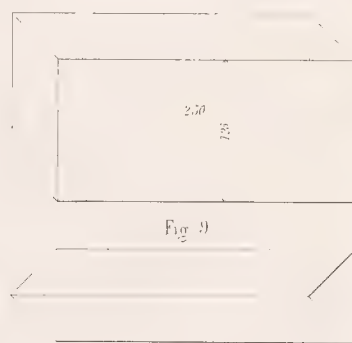


Fig 10

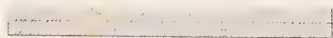
Fig 8

Coupe suivant V'XX Fig 5

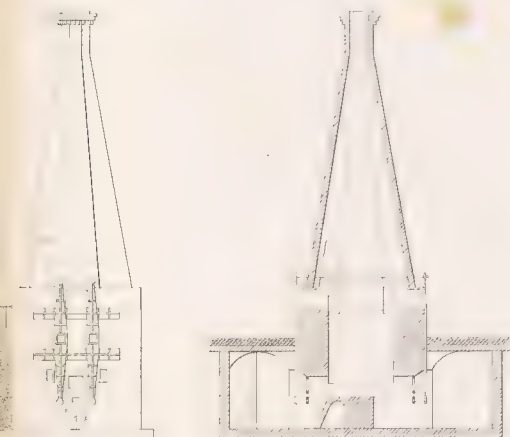
Plan



Coupe en long des plateaux Fig. 7



(Ventes de travail supprimées.) Fig. 5. Coupe suivant MM Fig. 4.



Coupe suivant AB Fig. 11.

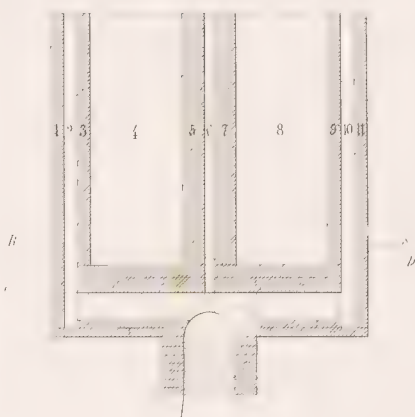
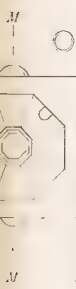
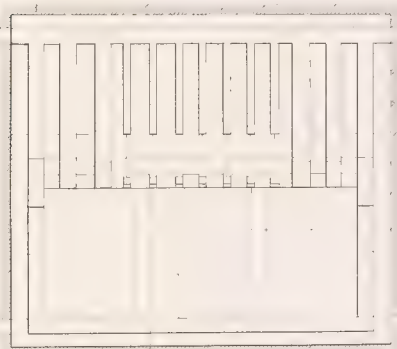


Fig. 6



Coupe suivant CD Fig. 15.



Coupe suivant RS Fig. 12



90-B-4488

THE GREEN
L-100-11

Fig. 182.

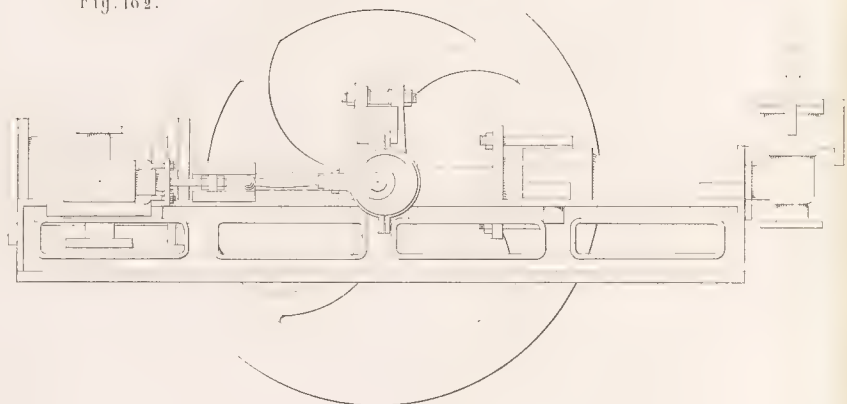
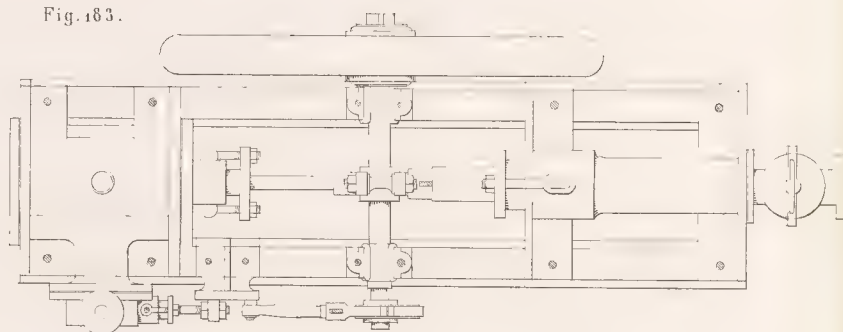
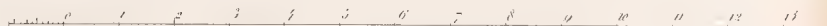


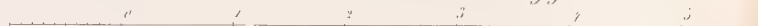
Fig. 183.



Echelle des fig. 182, 183, 184, 185.



Echelle de la fig. 186.



at à simple effet.
ne à Bourdon.

Fig. 184.

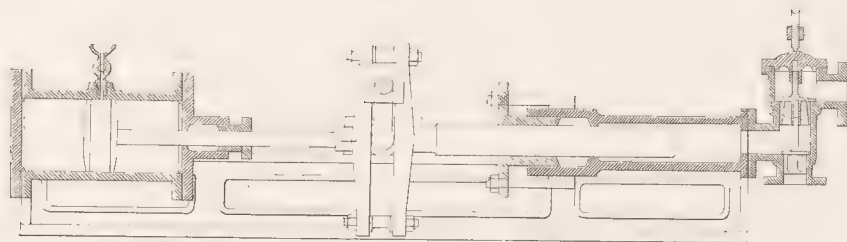


Fig. 185.

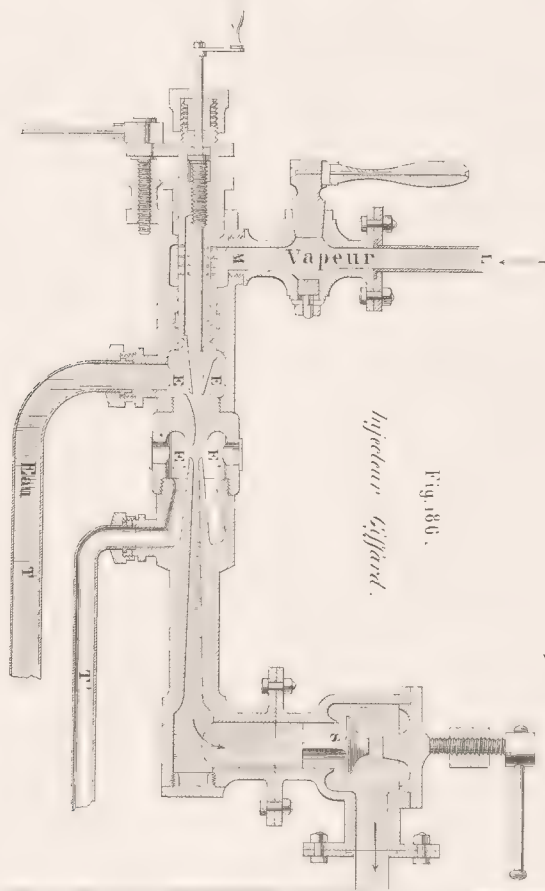
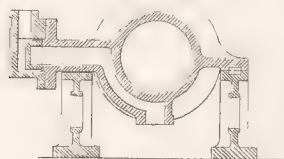


Fig. 186.

0 5 10 15 20 Mètres.

0 7 8 Décim.

Fig. de E. A. et de E. A. et de E. A.

70-B.4422

THE GETTY CENTER
LIBRARY



*Petit cheval
Système*

Fig. 175. *Élévation AB.*

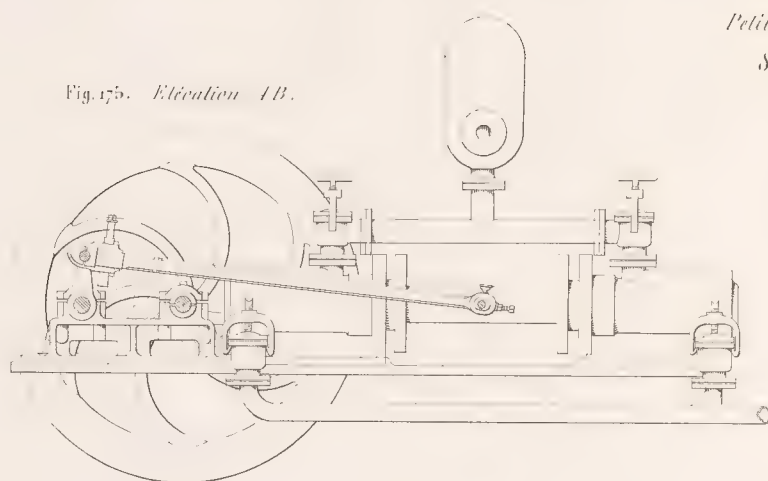


Fig. 176. *Coupe EF.*

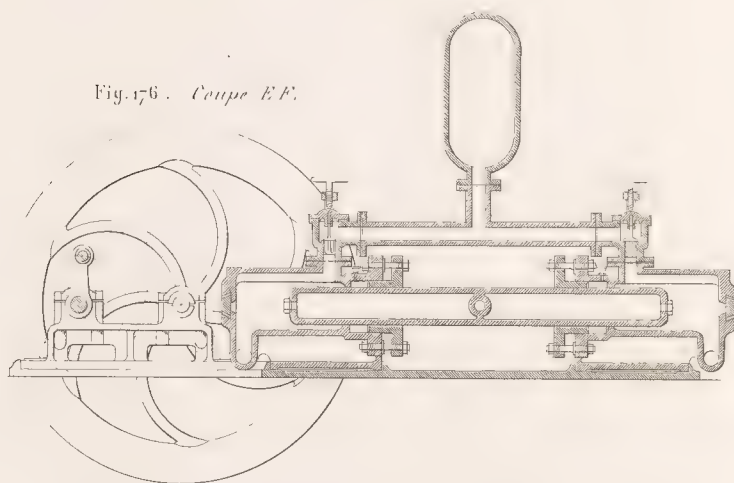
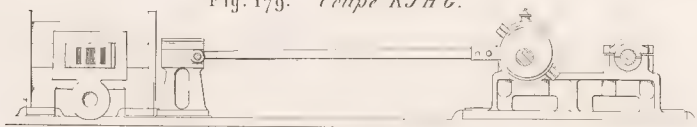


Fig. 179. *Coupe KJHG.*



à double effet.
E. Beurden.

Fig. 177. Coupe CD.

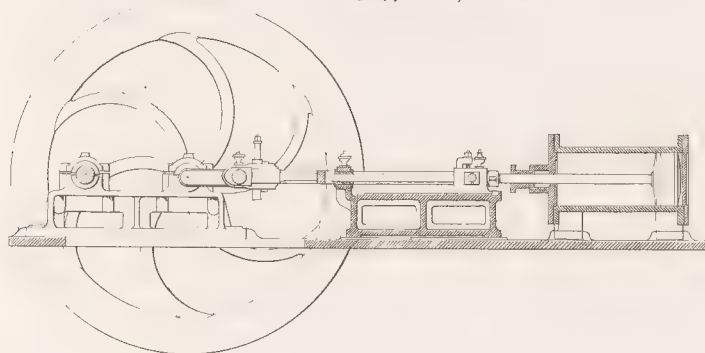


Fig. 178. Plan

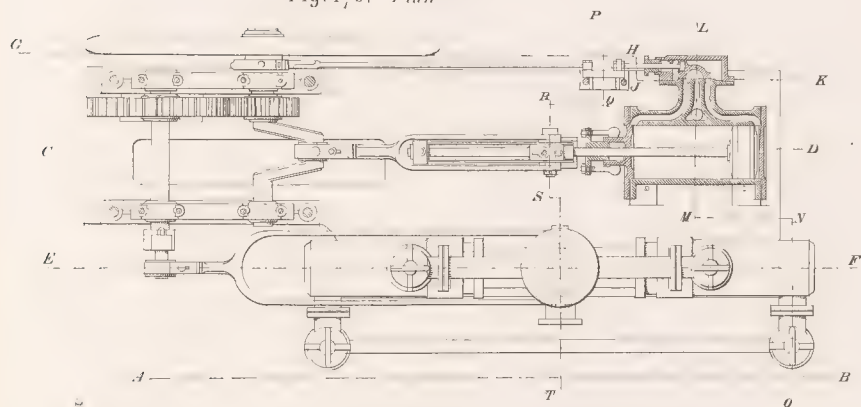


Fig. 180. Coupe L M A O.

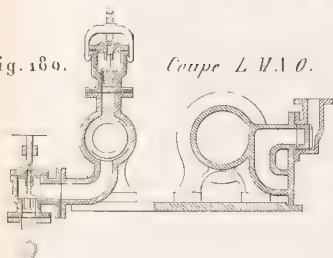
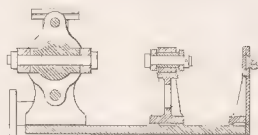


Fig. 181. Coupe P Q R S T.



70-B-113

TWENTY CENTER

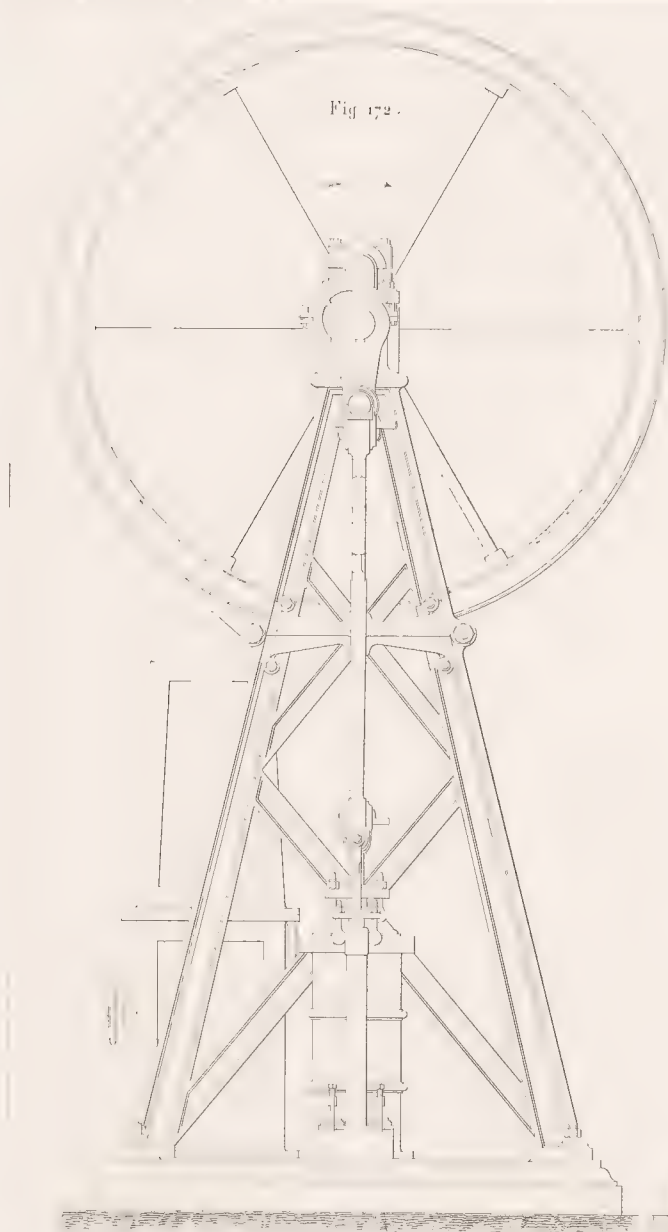


Fig 172.

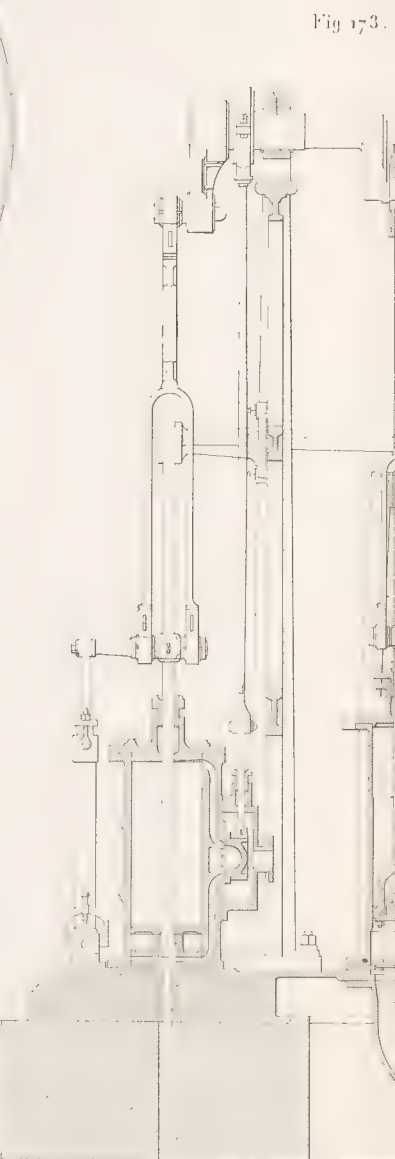
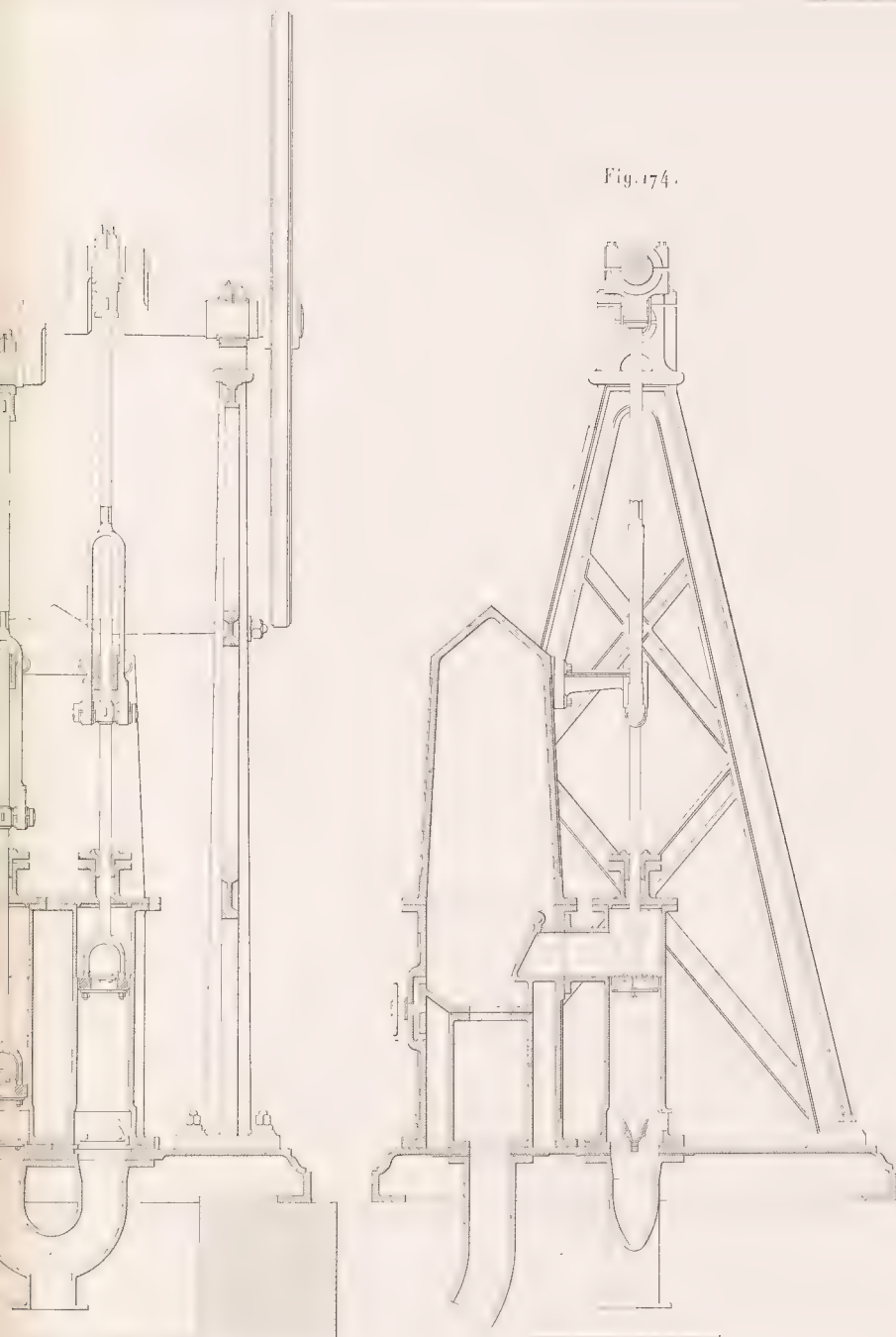


Fig 173.

1 cm = 0.025 pour mètre
1 2 3 4 5 6 7 8 9 10

Fig. 174.



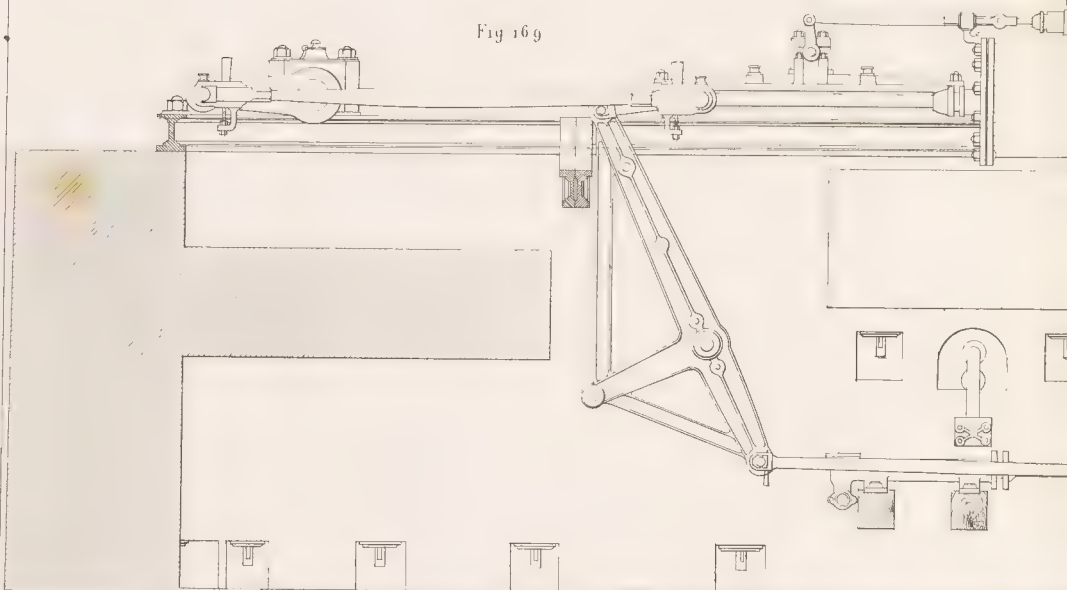
70-6-4903

THE CITY OF
LONDON



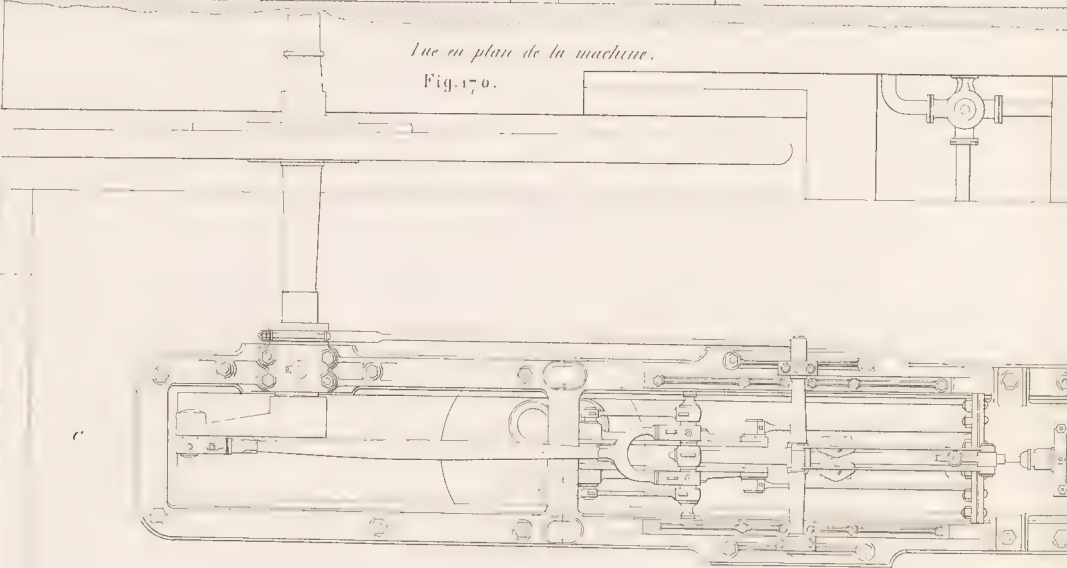
Coupe longitudinale suivant C'D.

Fig. 169



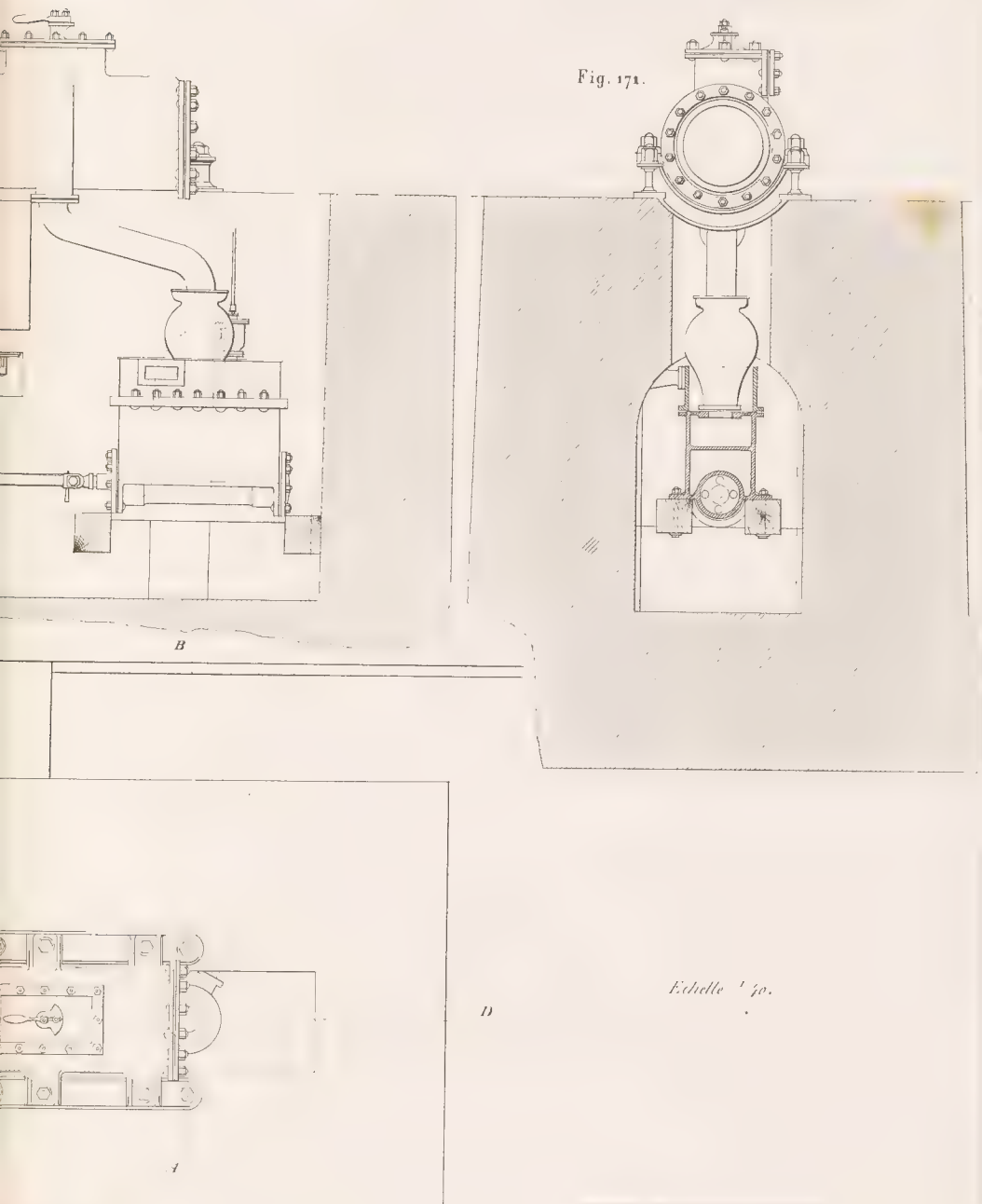
Vue en plan de la machine.

Fig. 170.



Coupe verticale et transversale suivant A B.

Fig. 171.



90-B-4488

THE CITY CENTER
NEW YORK



Fer.

UTILISATION DES CHALEURS PERDUES AU

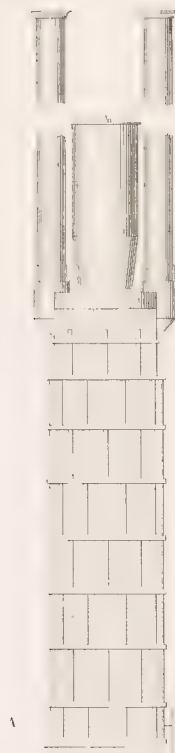
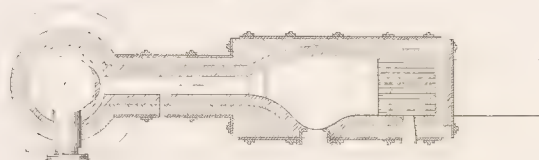


Fig 165 Elevation d'une cheminée métallique
implantée sur la Fig 166



Fig 166 Coupe horizontale de la cheminée
et de l'usine par A et B, fig 165



Echelle de 0.50 par Mètre

exécuté et imprimé

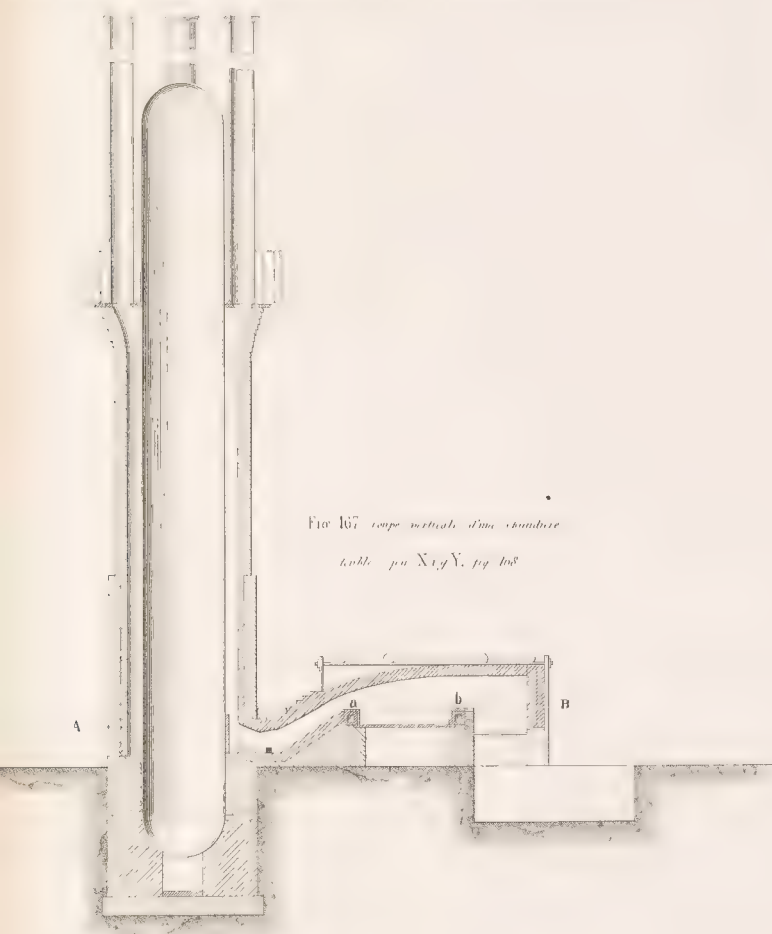


Fig. 167 coupe verticale d'une chaudière
voir p. 157, fig. 168

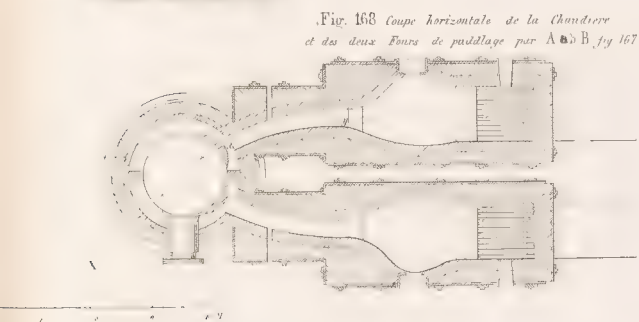


Fig. 168 coupe horizontale de la chaudière
et des deux Fours de paddlage par A-B, fig. 167

90-B.4488

THE CITY CENTER
NEW YORK



Fig. 161.

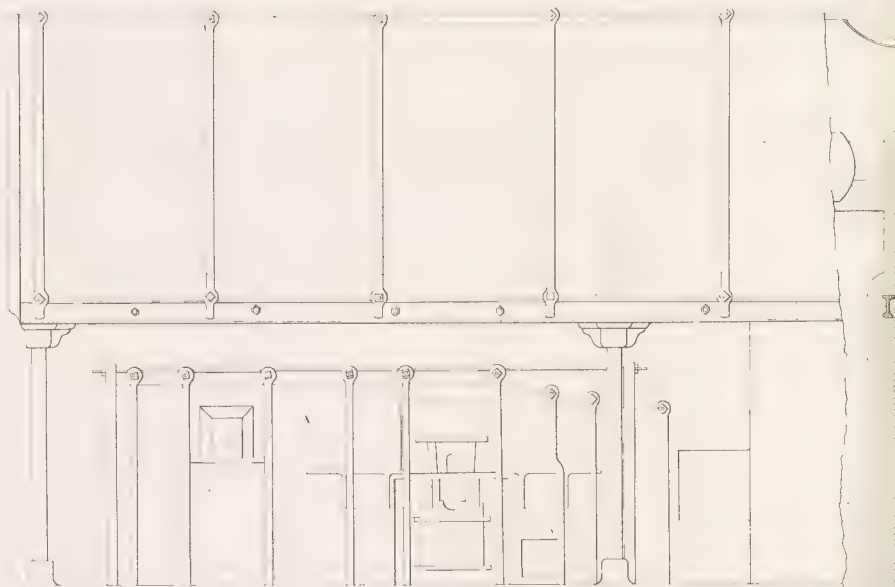


Fig. 164 .

Nouvelle disposition des canaux .

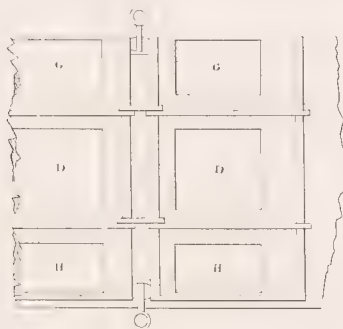
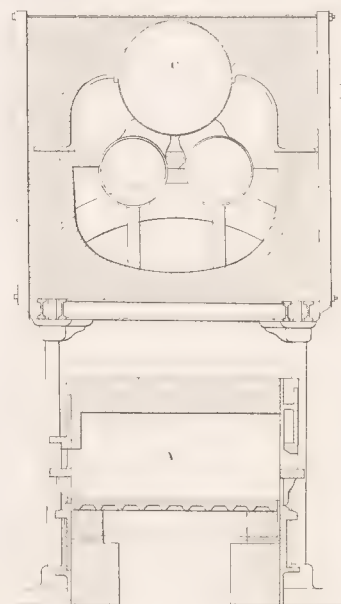


Fig. 162 .



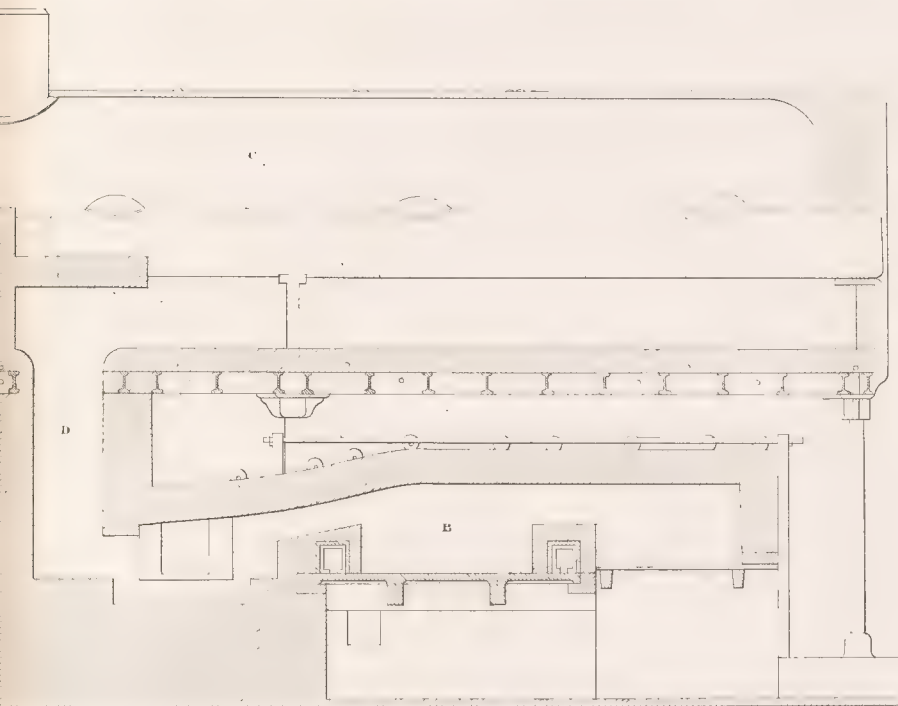
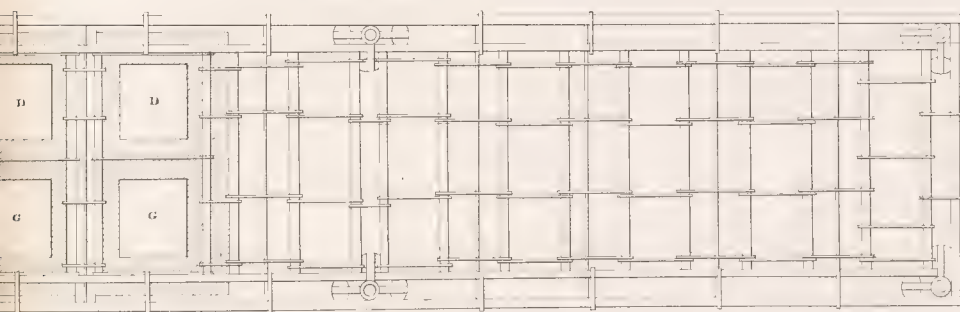


Fig. 163.



90-B-4488

THE SETTY CENTER
LONDON

Fig. 101.



Fig. 15.2

Fig. 153.

Fig. 154.

Fig. 155

F19.156.

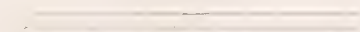


Fig. 157.

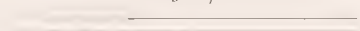


Fig. 158.

p. 19, 159



Fig. 160.

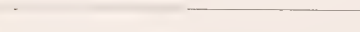
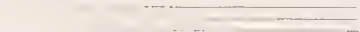
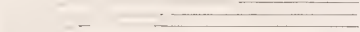


Fig. 149.

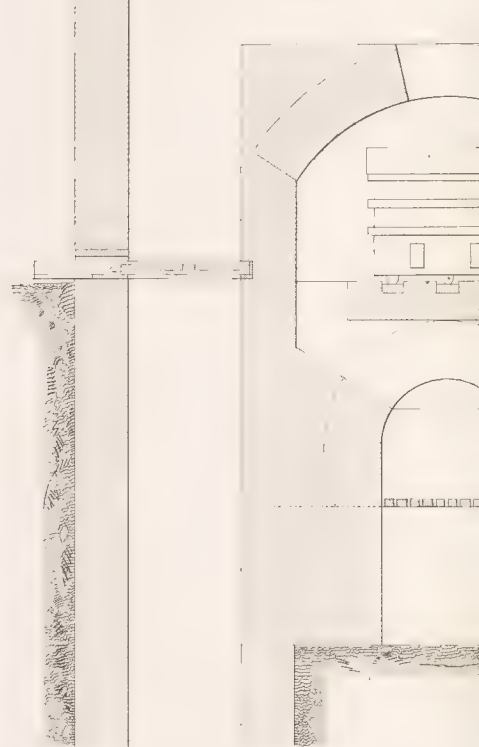


Fig. 147.

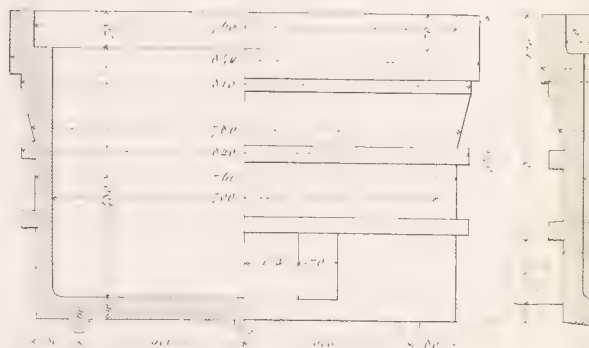


Fig. 150.

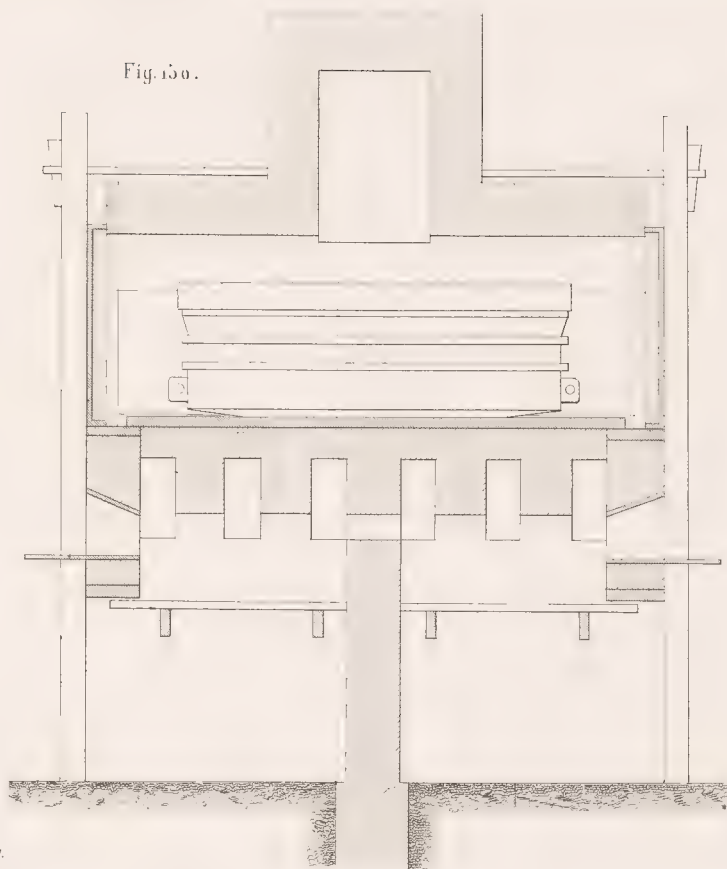
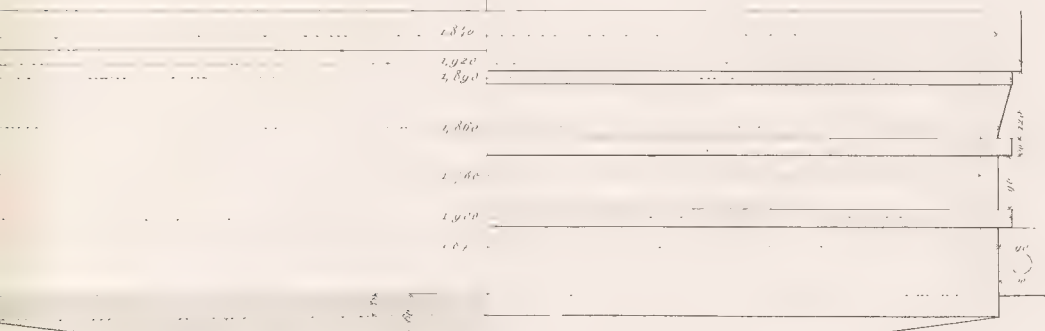


Fig. 148.



Echelle des fig. 147, 148 '10.
" " " 149, 150 '20.

70-B-4488

THE CITY CENTER
Library



Fig. 139.

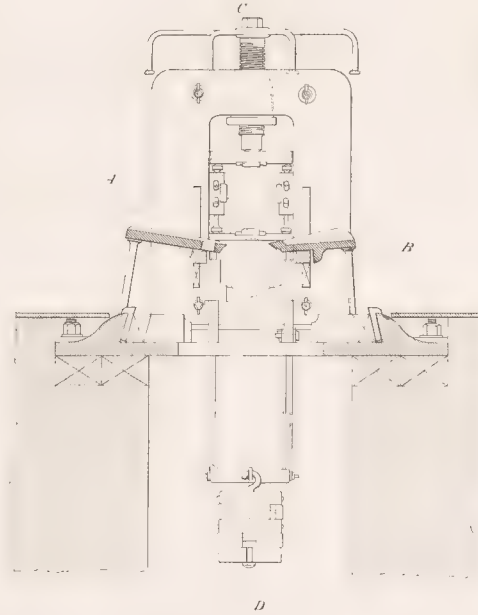


Fig. 140.

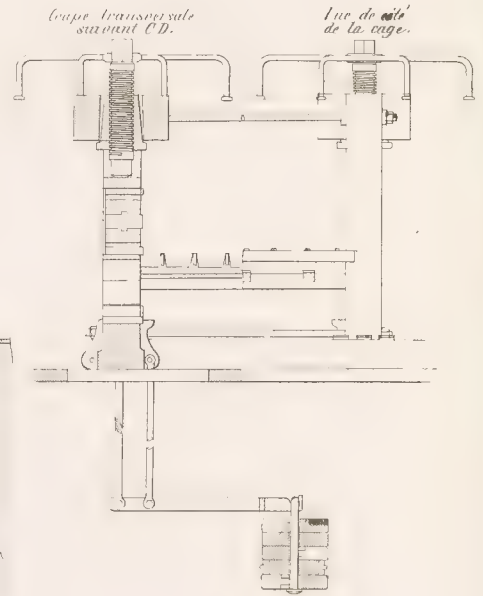


Fig. 141.

Plan dessus

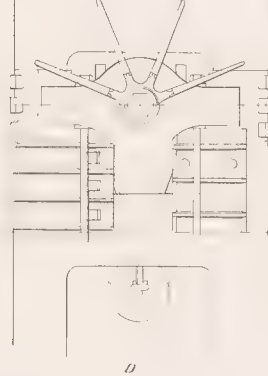
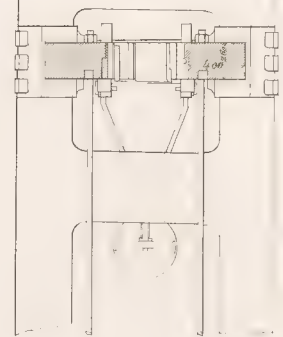


Fig. 142.

Coupe en plan suivant A.B.



Echelle 1/20

Fig. 144.

Coupe suivant AB et le chapeau suivant GH.

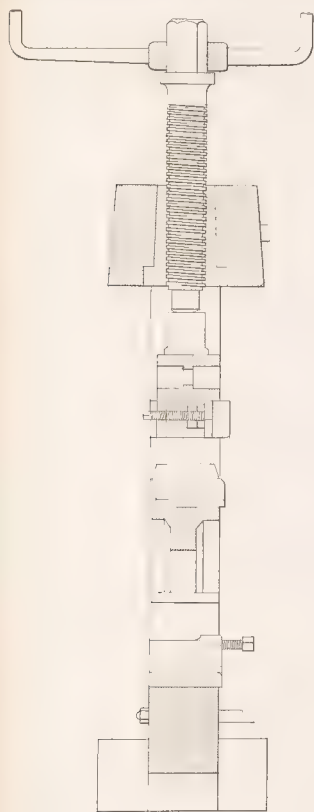
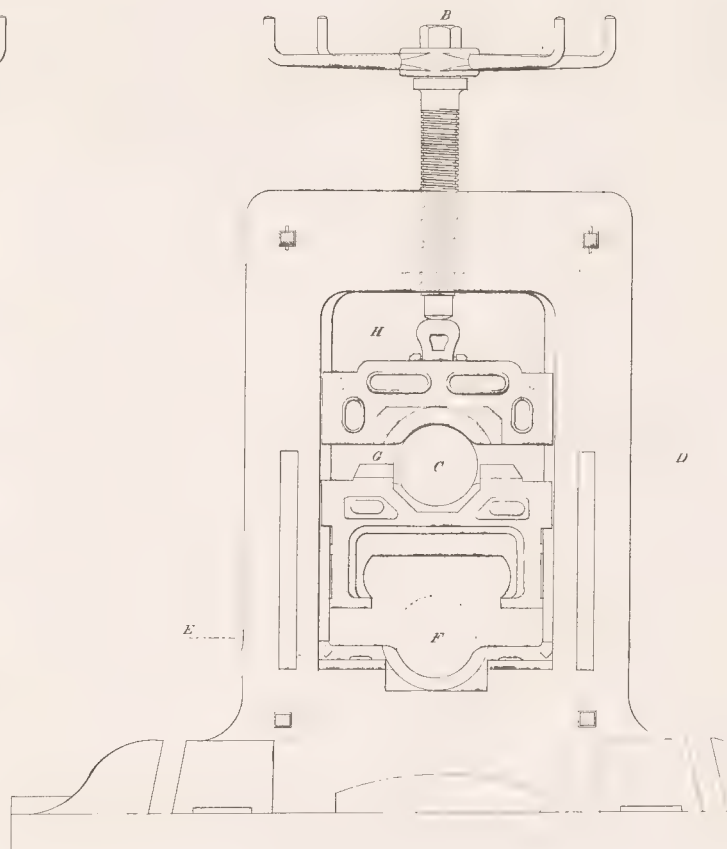


Fig. 143.



Plans en coupe suivant CD et EF

Fig. 146.

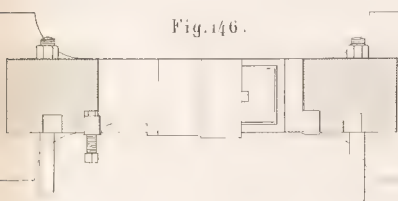
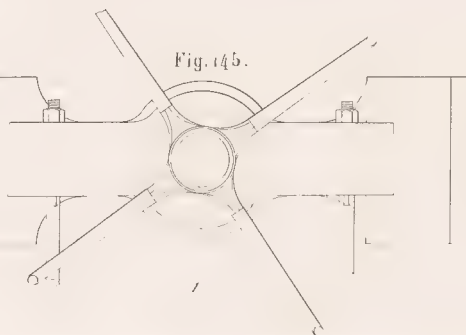


Fig. 145.



Echelle 1/50

70-13 4488

THE OTTY CENTER
L.A., IV



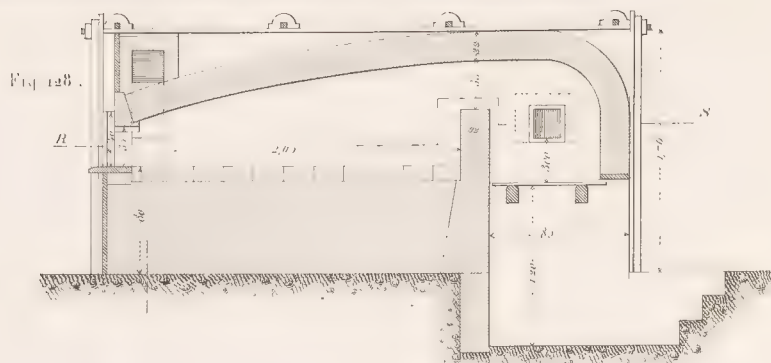


Fig. 129.
Coupe R.S.

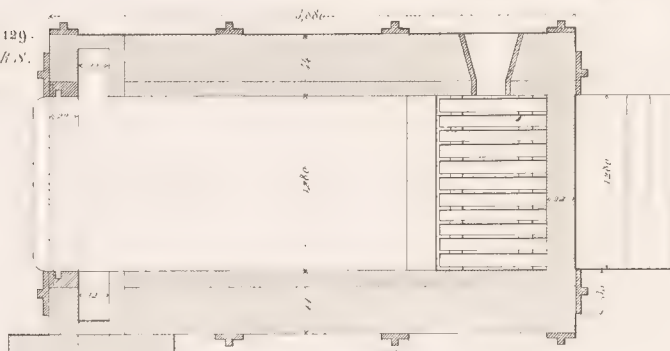


Fig.
Coupe

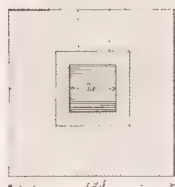


Fig. 133.
Coupe transversale
suivant AB.



Fig. 136. Coupe longitudinale suivant AB'

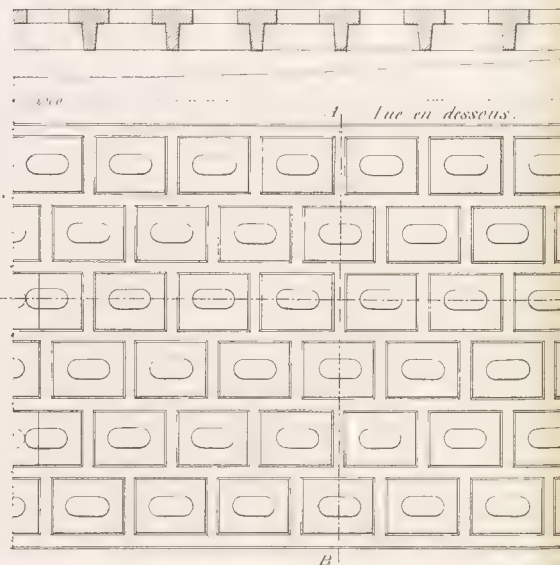
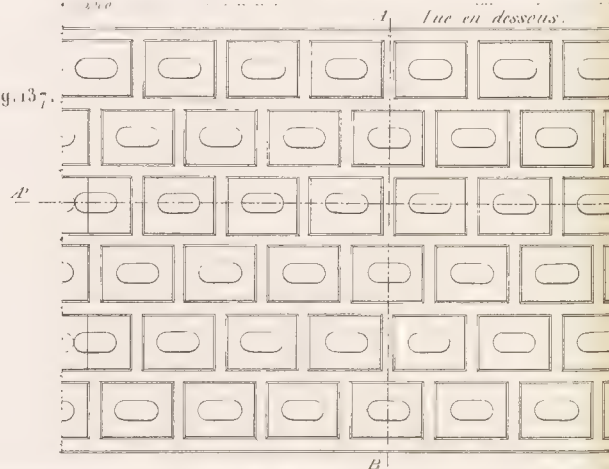
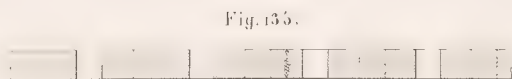
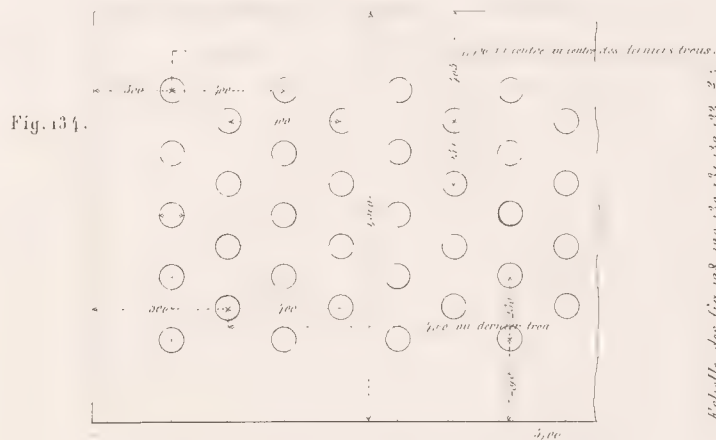
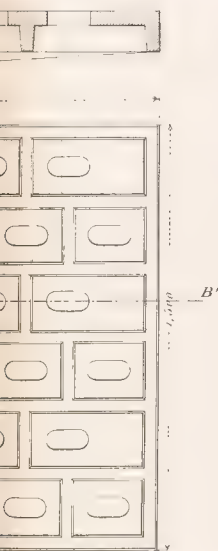
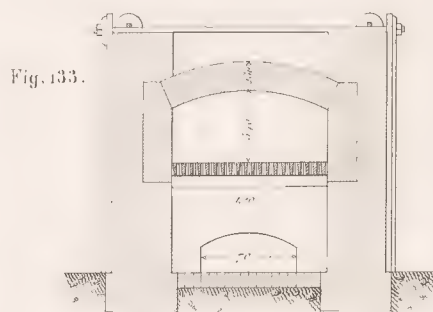
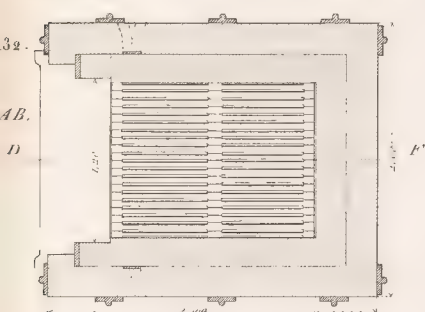
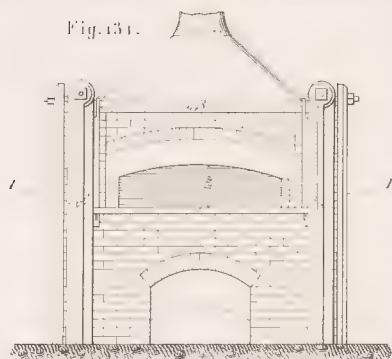
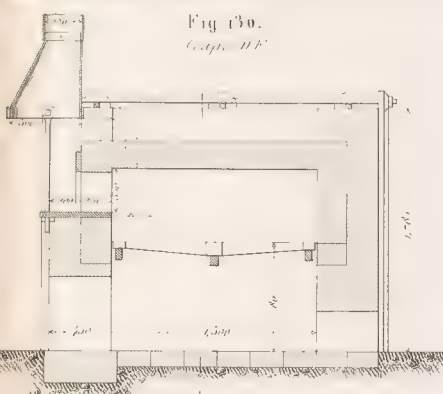


Fig. 137.





Echelle des fig 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138.

70-13-4488

THE GETTY CENTER
LIBRARY



TRAIN DE FENDERIE; TREFFLES; COUVERTURES.

Fig.

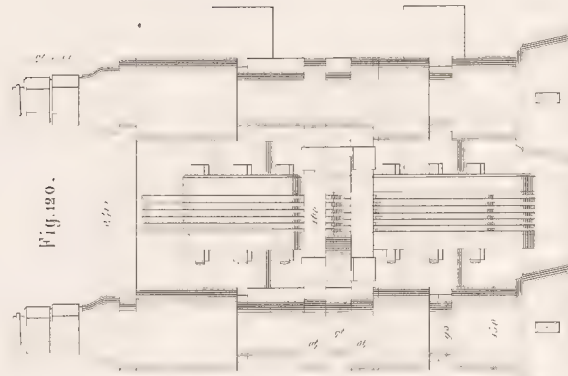


Fig. 120.

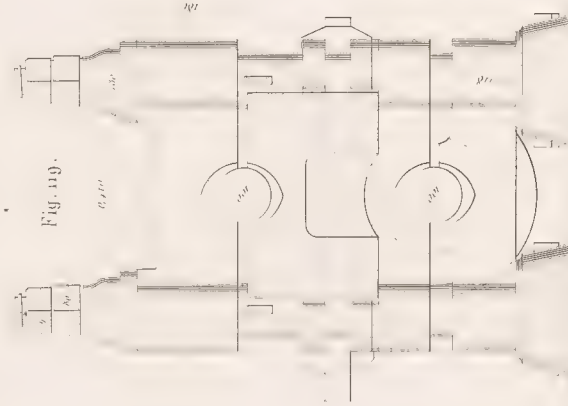


Fig. 119.

7.00
8.00
4.00

Fig. 121.

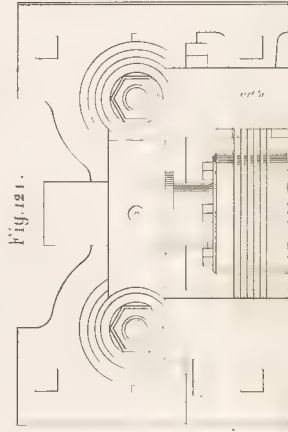


Fig. 122.

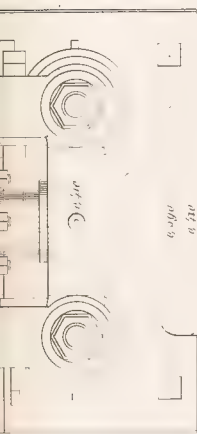


Fig. 123.

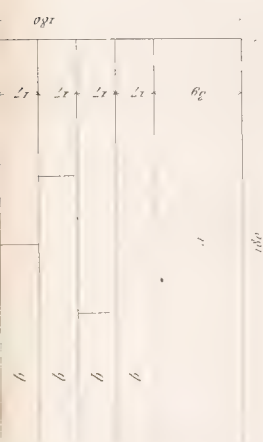


Fig. 124.

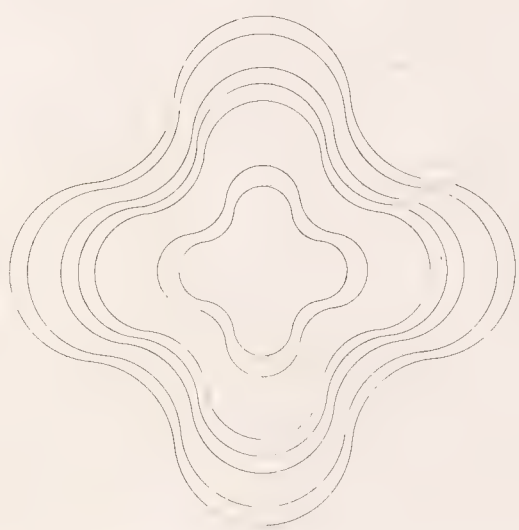


Fig. 127.

Grand mill réparé
Grand mill normal
Grand mill réparé
Grand mill normal et poulage réparé
Poulage normal
Grosse aile et per-blanc réparé
Grosse aile et per-blanc normal

0 1 2 3 4 5 6 7 8 9 10 Mètres

10 Mètres

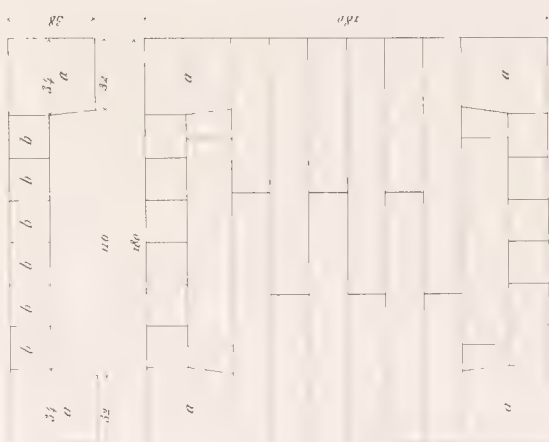


Fig. 125.

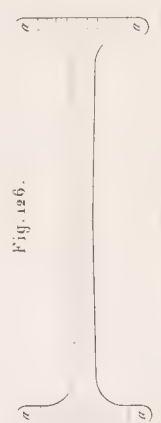


Fig. 126.

10 Mètres

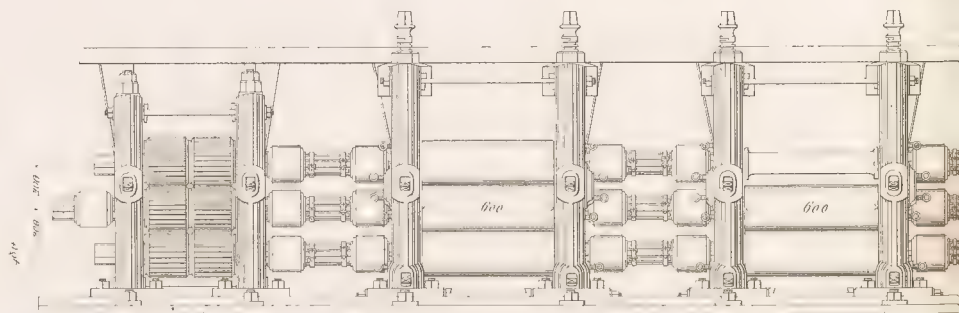
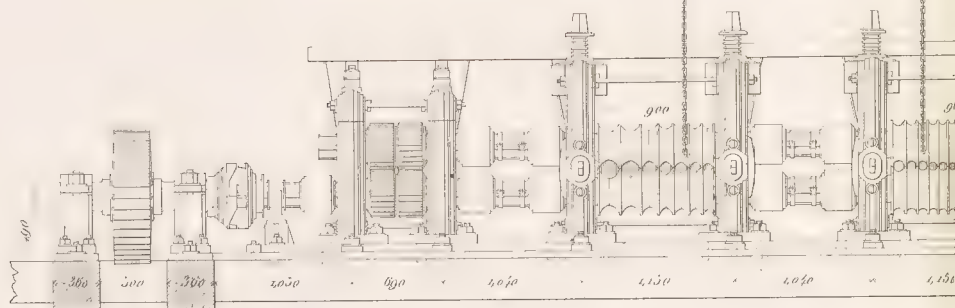
90-8-448

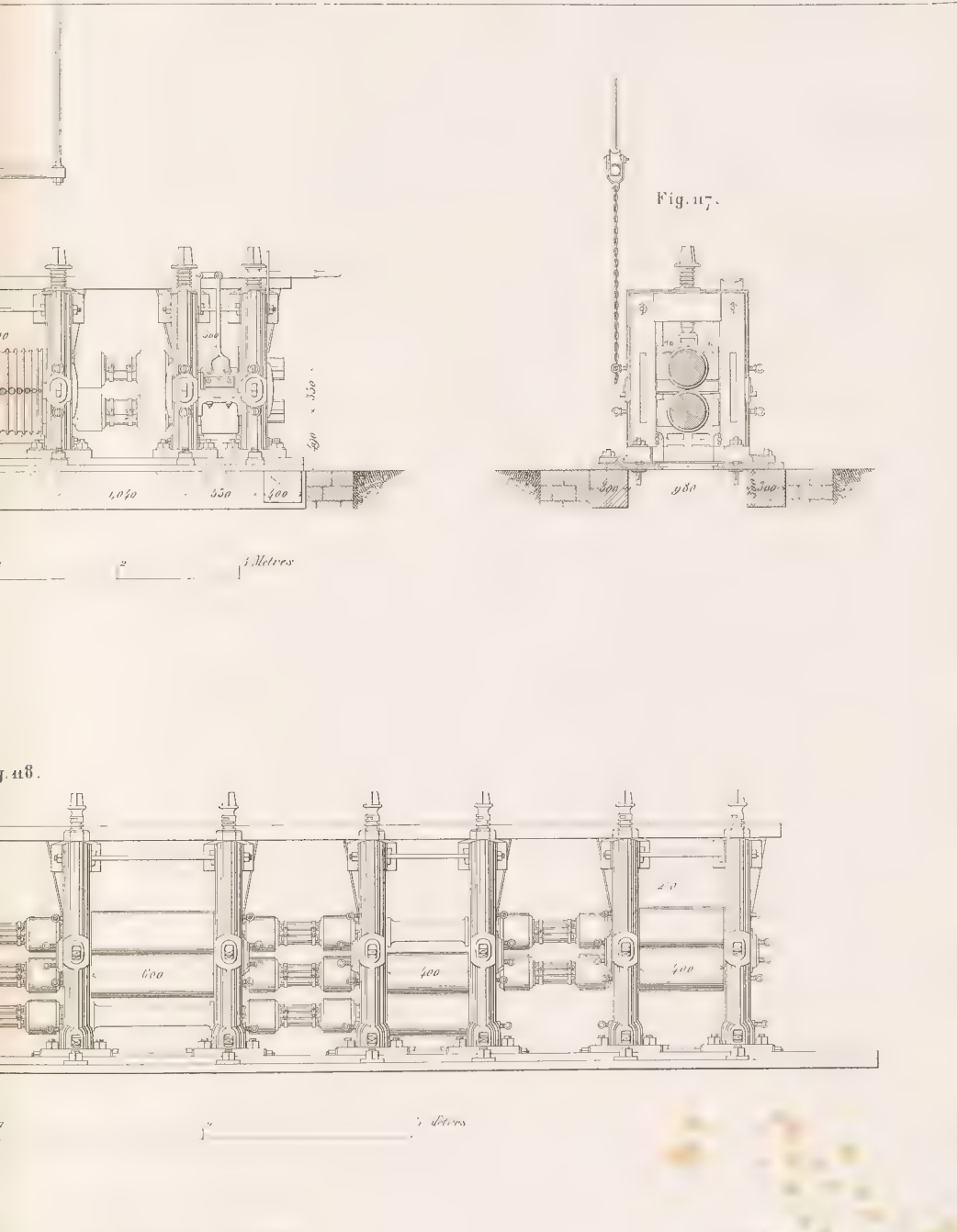
THE GETTY



Fer.

Fig. 116.



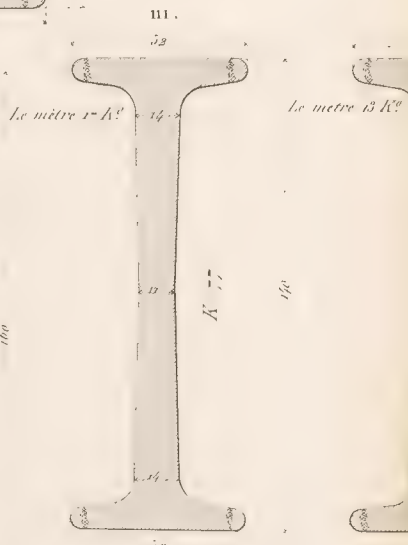
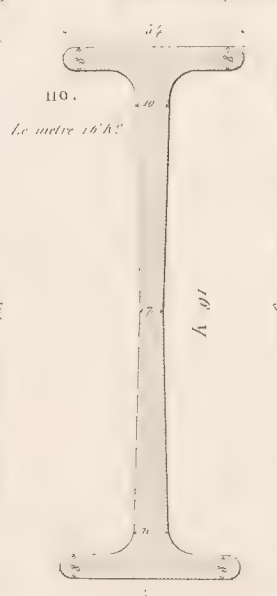
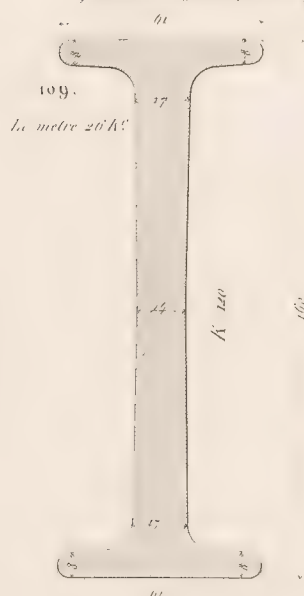
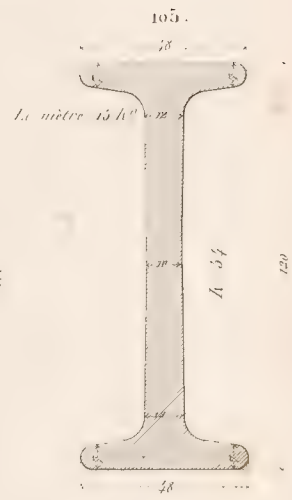
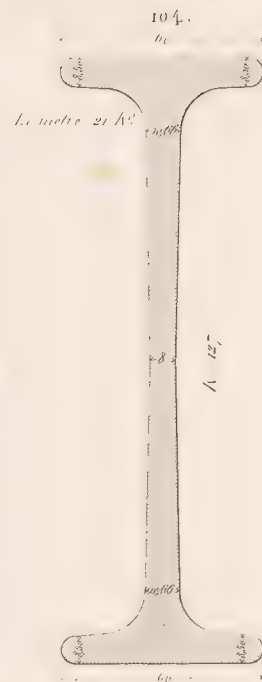
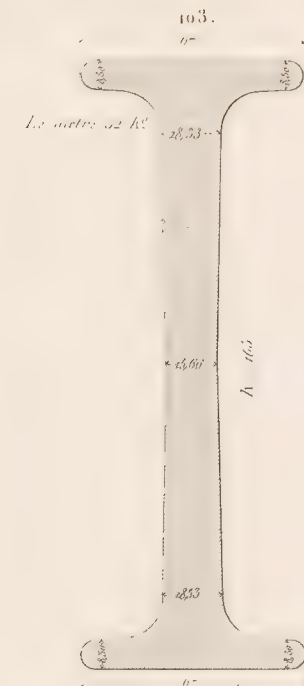


88-4-9-06

THE CITY OF NEW YORK
LIBRARY

Fer.

PROFILS DE



Eche

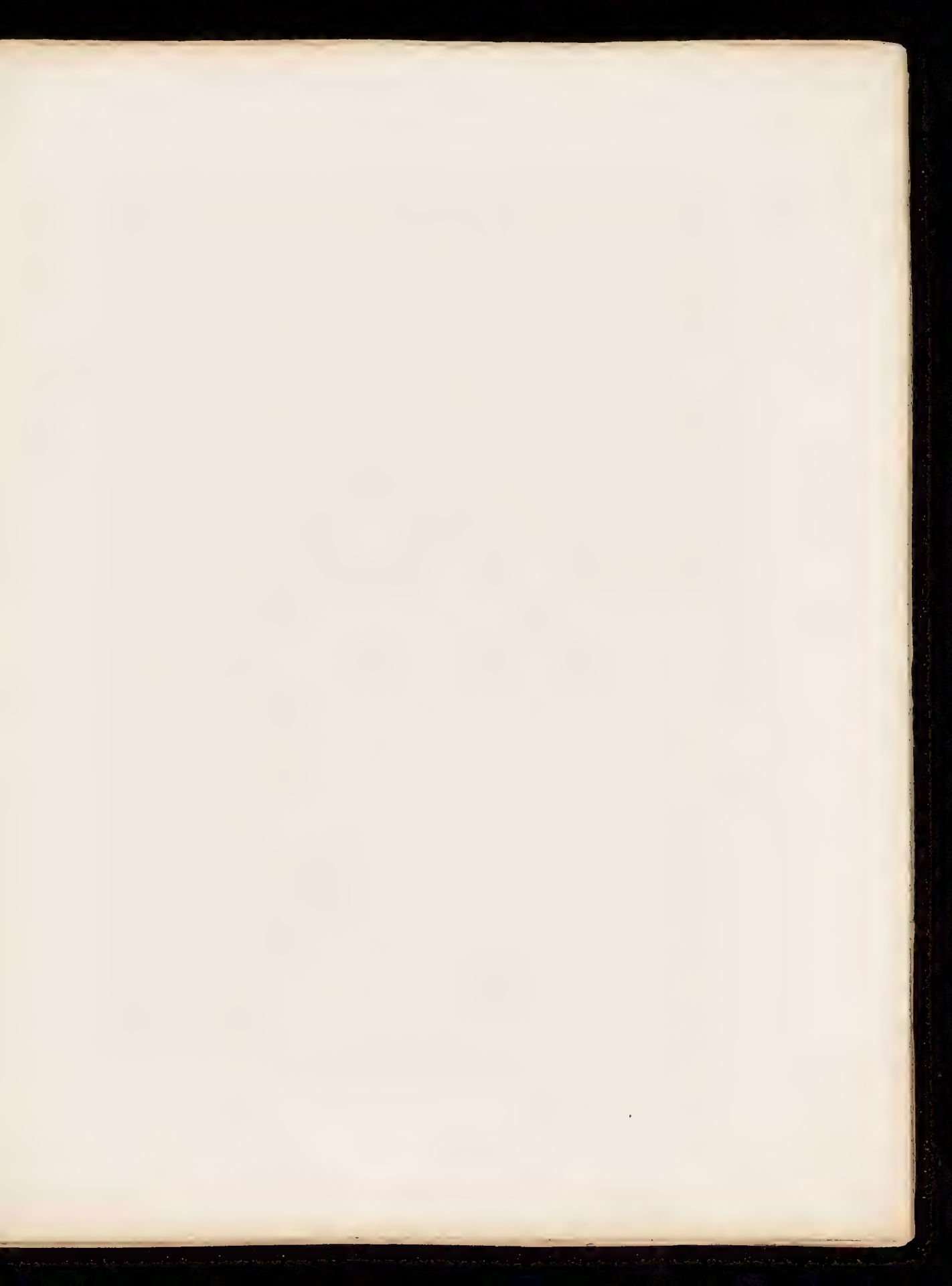
Echant. et comp.



lle 35.

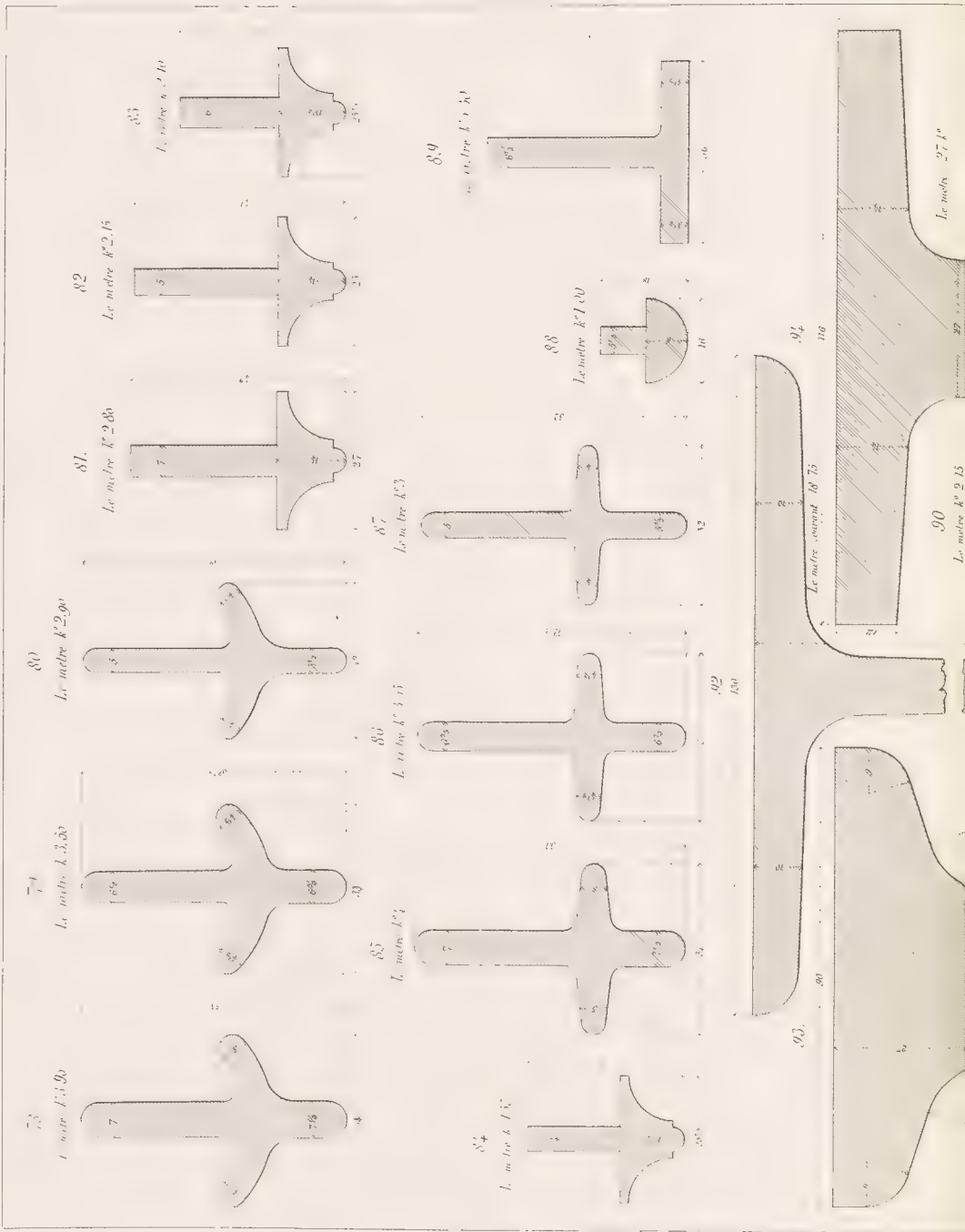
90-B. 4488

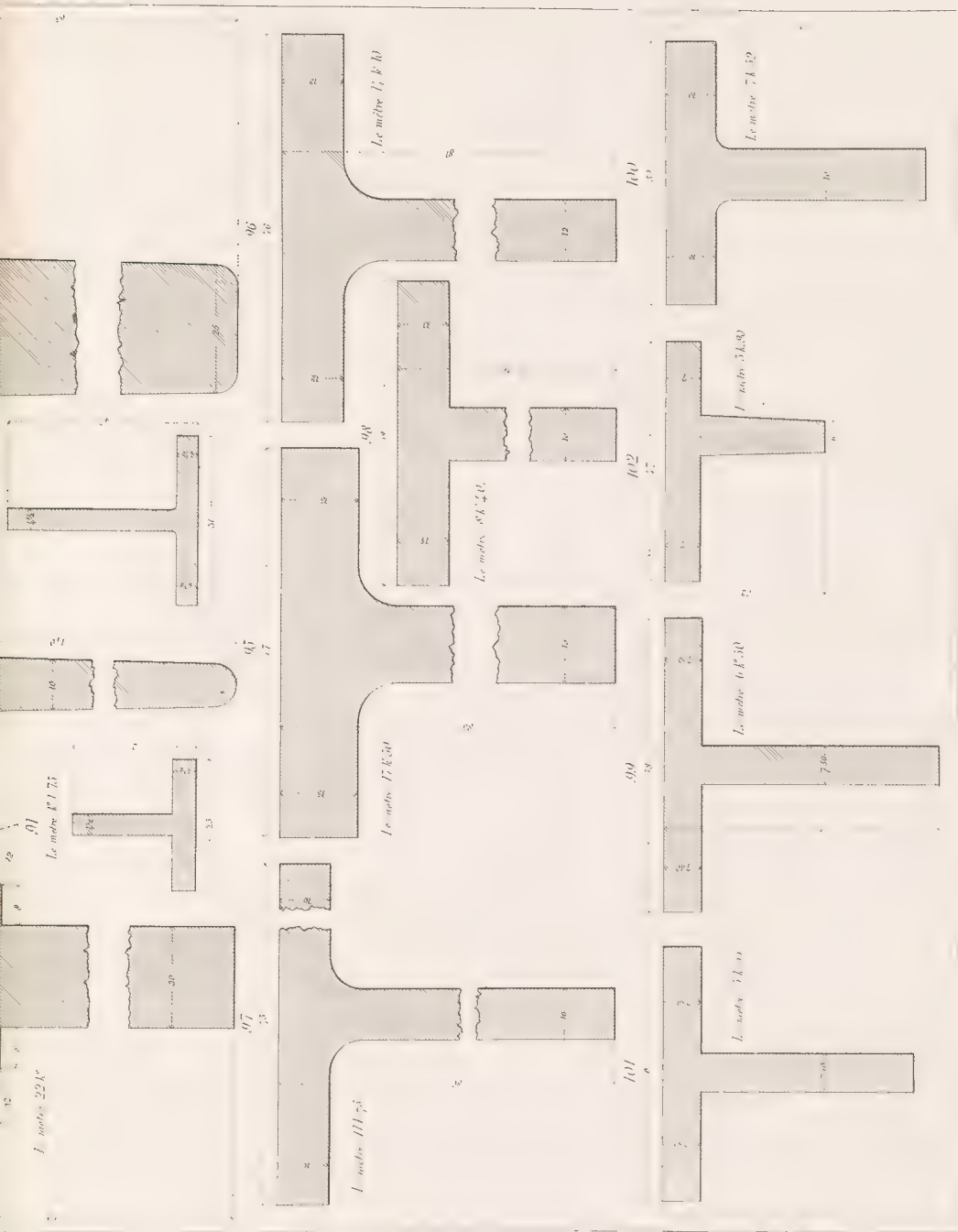
THE GEORGE CENTER
Library



PROFILS DE FERS A VITRAGES ET EN T.

Fer.



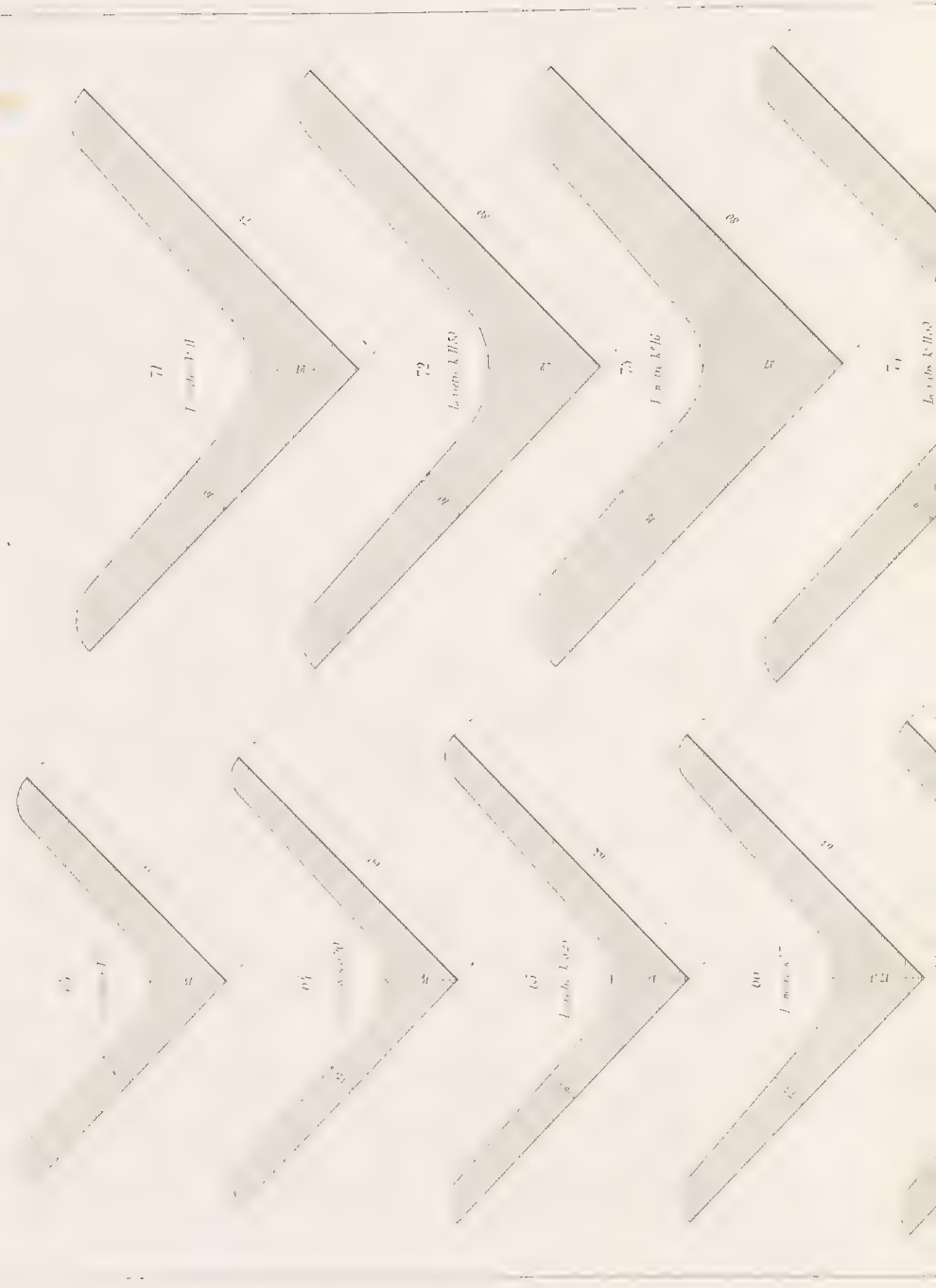


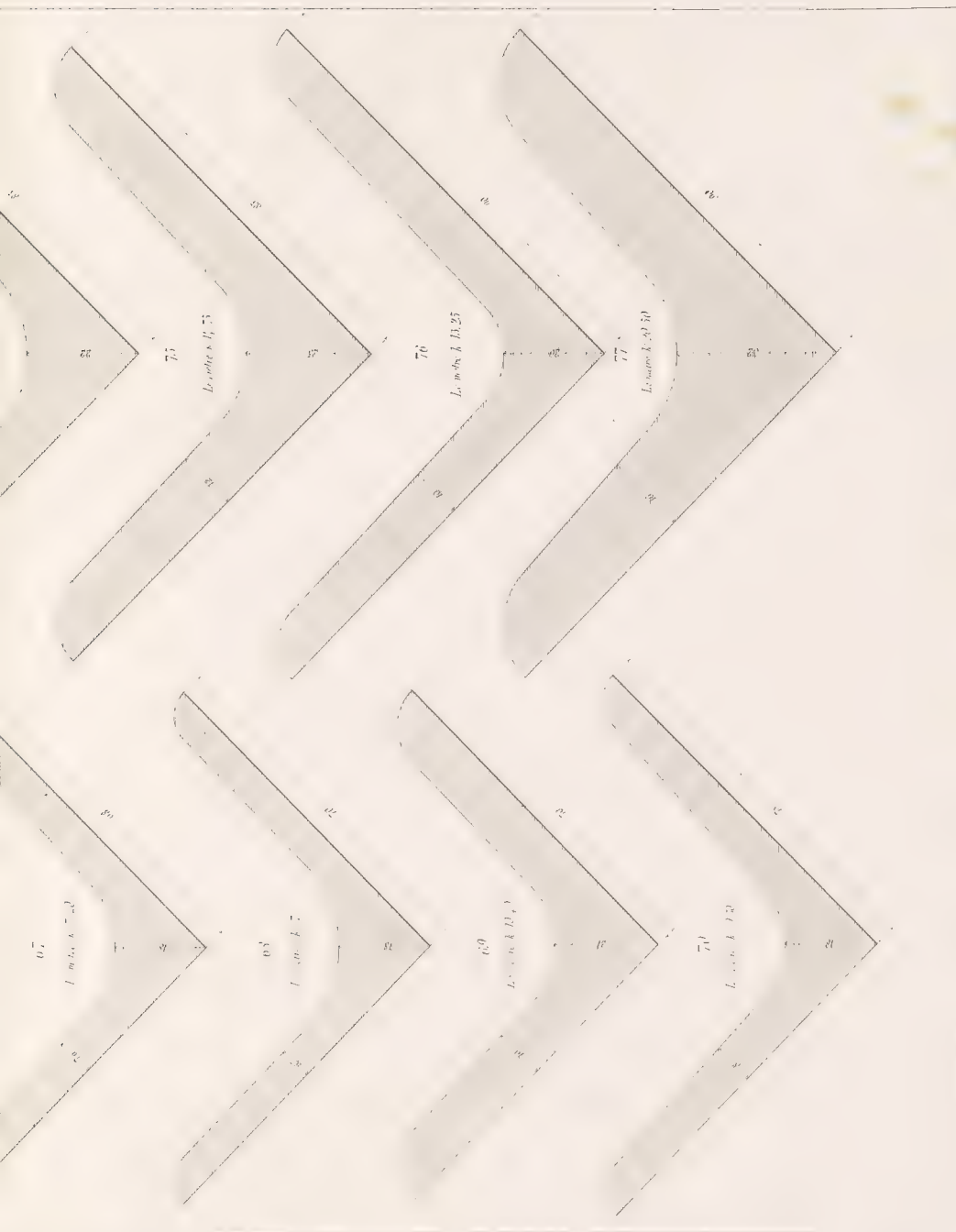
1. The first group of people who are interested in the study of the history of the world are the historians. They are people who are interested in the past and who want to know what happened in the world. They study the past in order to learn from it and to understand the present. They write books and articles about the past and they teach in schools and universities.

90-B-4488

THE CITY OF NEW YORK







Échelle et comp. de E. Volder, Editeur

8844.9-00

WEST GATE CENTER



TRACÉ DES CAVELURES; PROFILS DE CORNIÈRES.

For.

Fig. 46

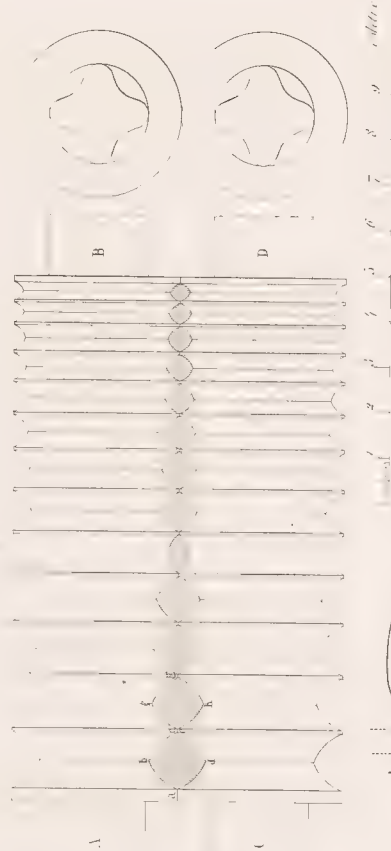


Fig. 47

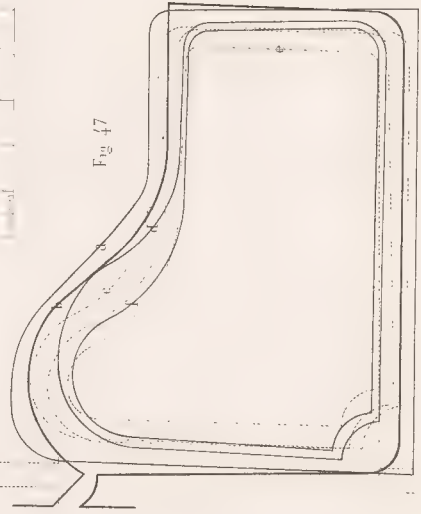


Fig. 48

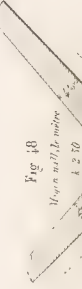


Fig. 49

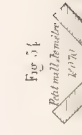
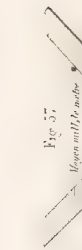
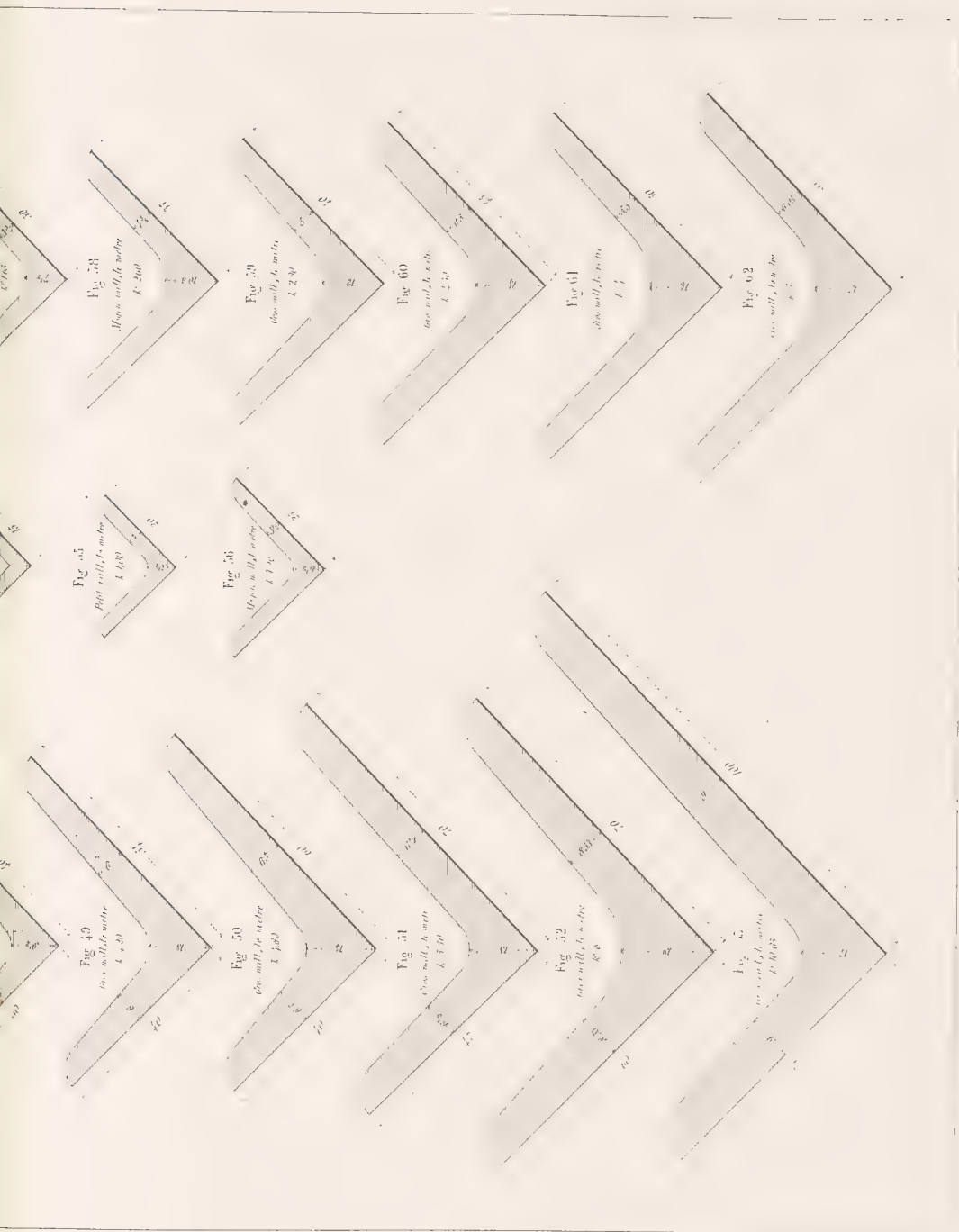


Fig. 50

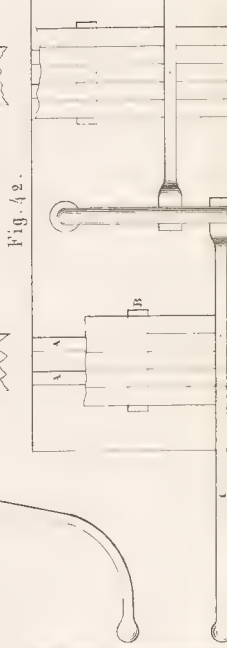
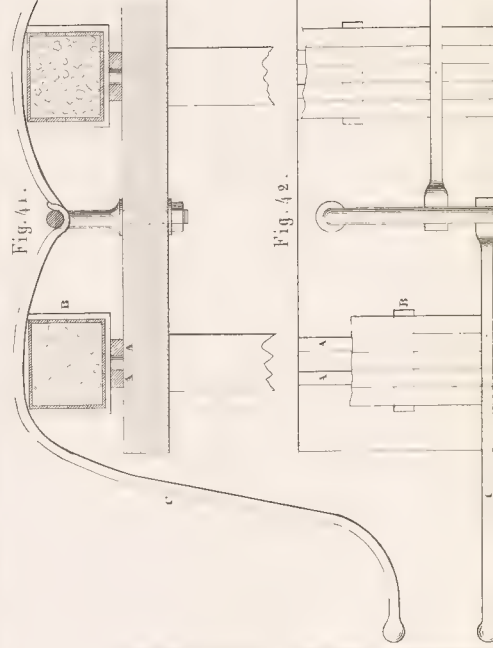
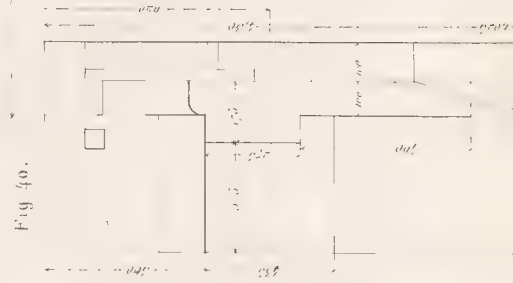
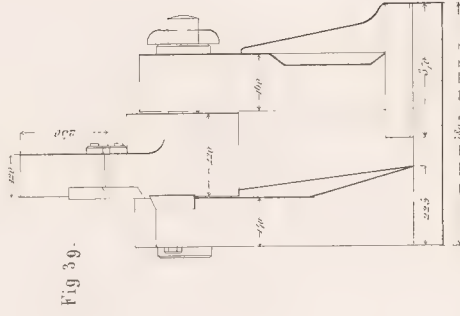
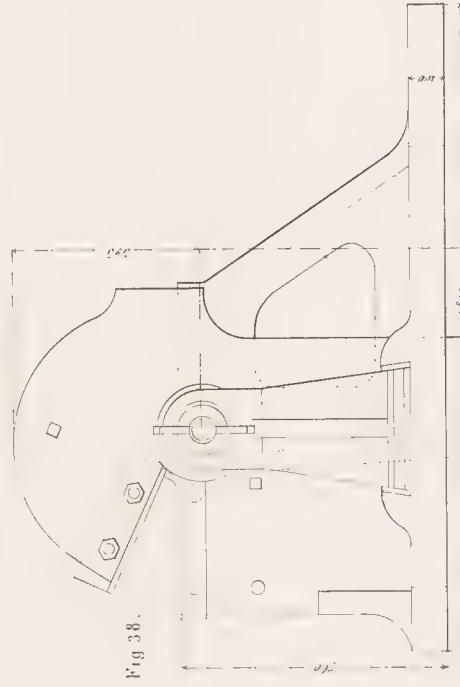




Projet de machine à vapeur

90-B-4488

THE GETTY CENTER
LIBRARY



90-B-448X

THE GETTY CENTER
Los Angeles



Fig. 31.

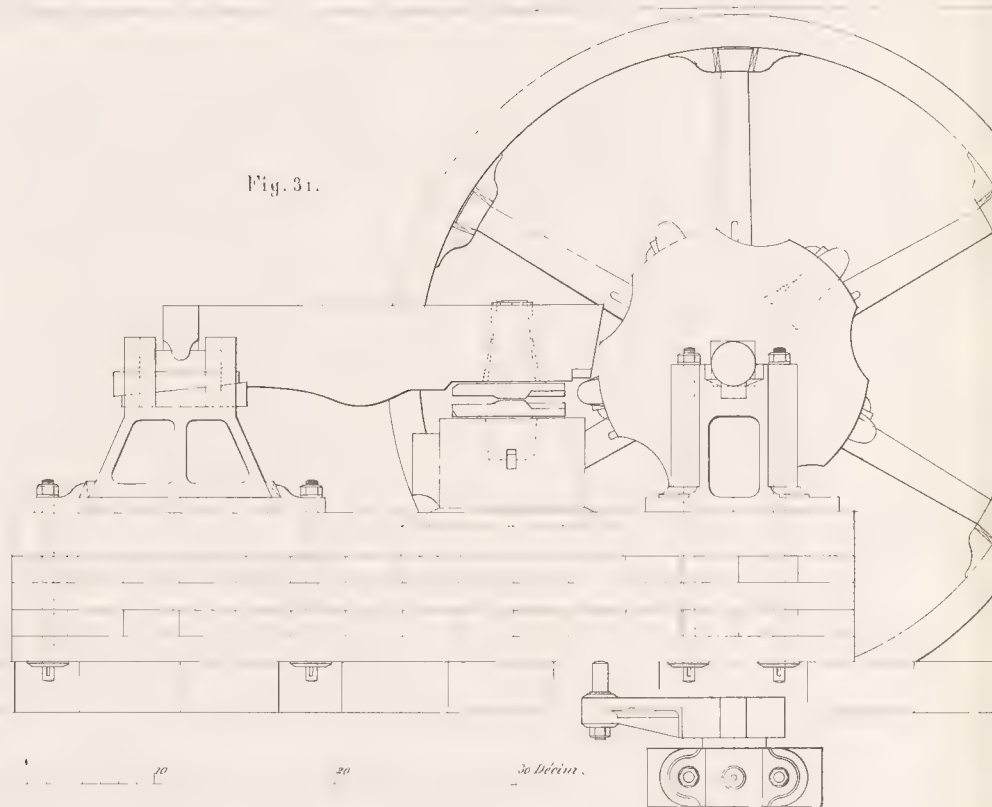


Fig. 32.

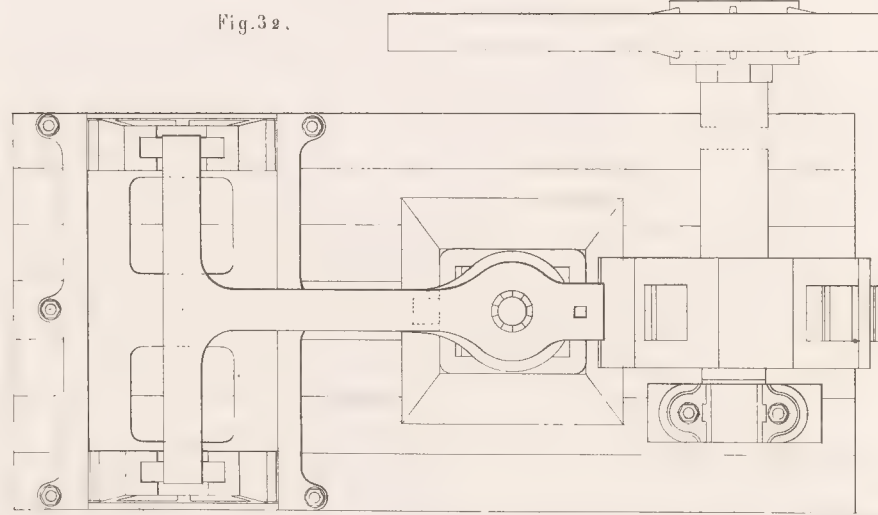


Fig. 33.

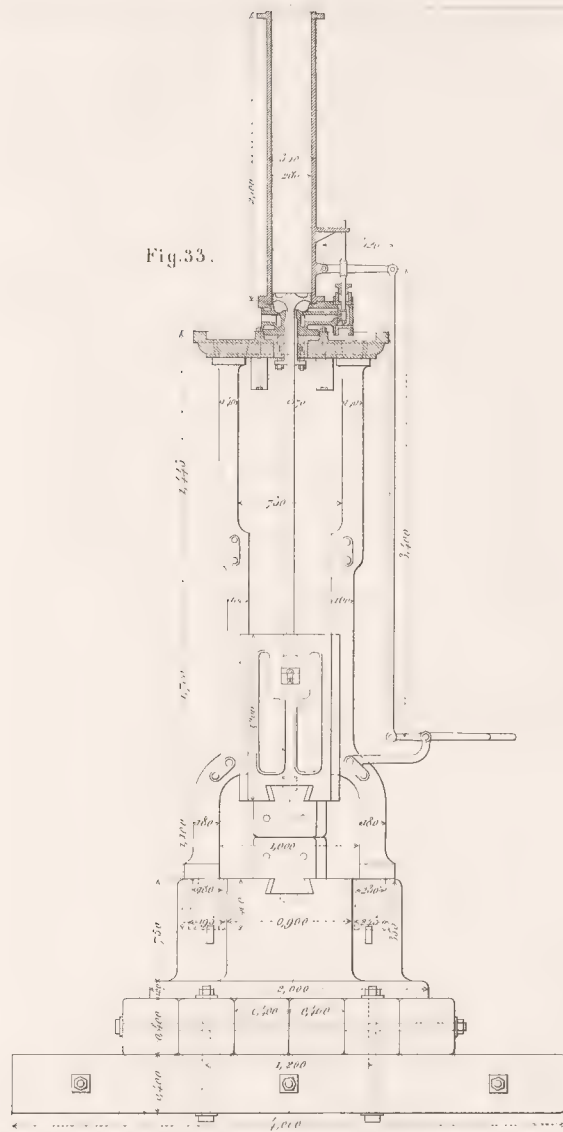


Fig. 34.

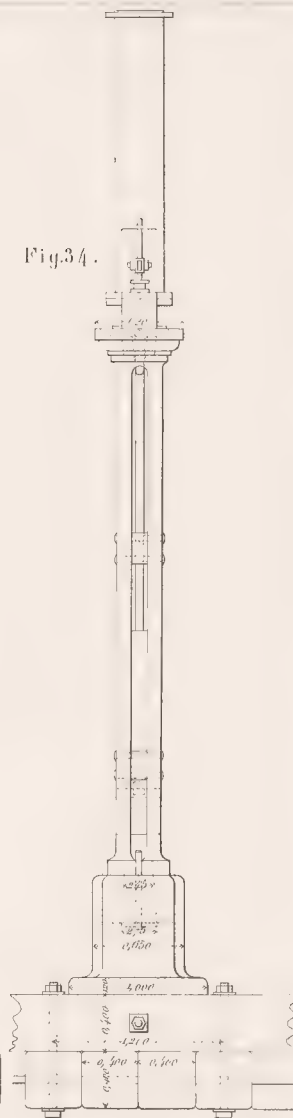


Fig. 35.

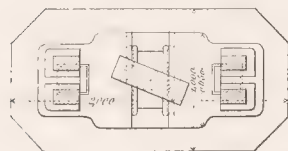


Fig. 36.

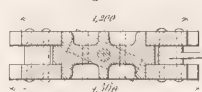


Fig. 37.



90-B-4488

THE JETTY CENTER
LIBRARY



APPAREILS DE CINGLAGE.

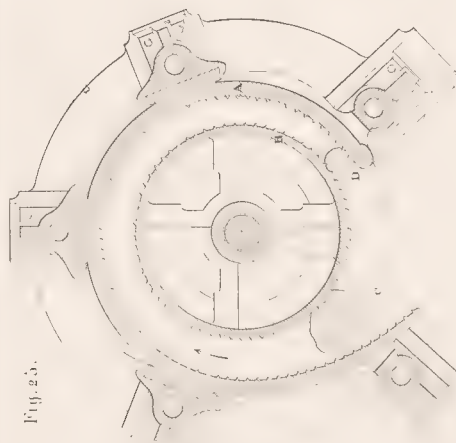


Fig. 25.

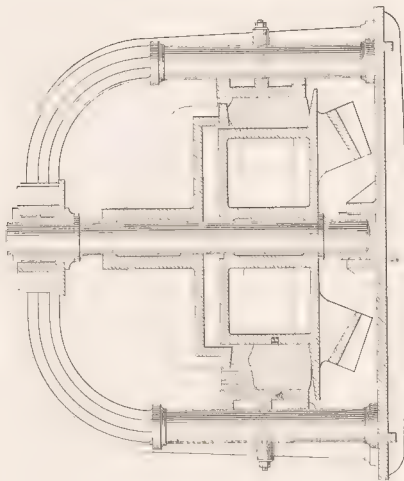


Fig. 26.

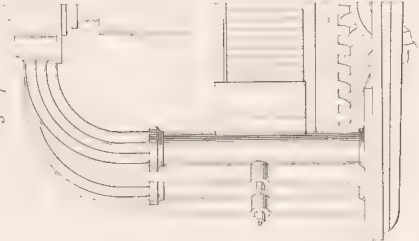


Fig. 27.

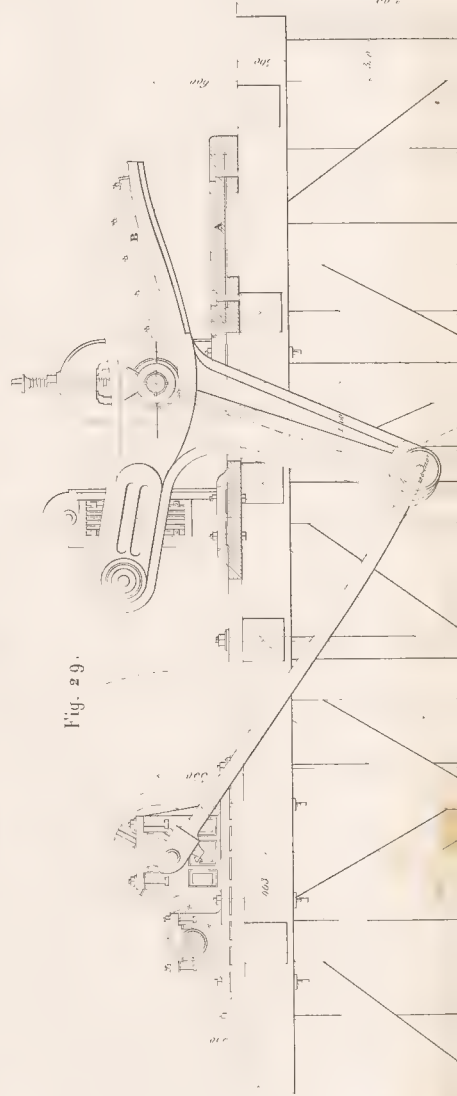
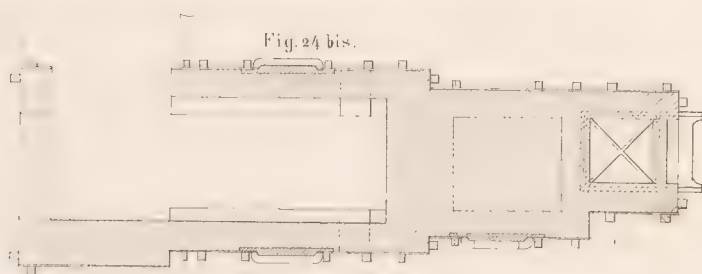
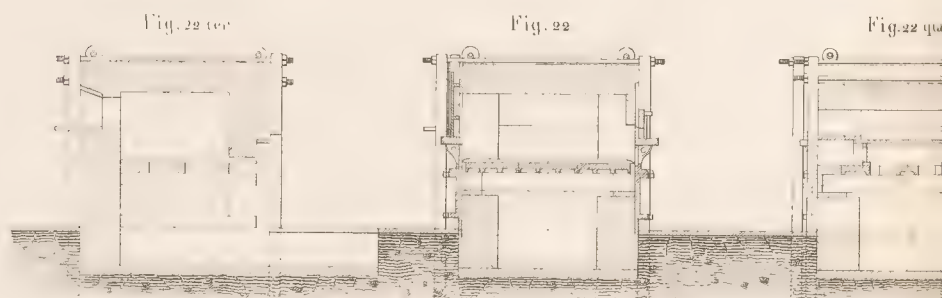
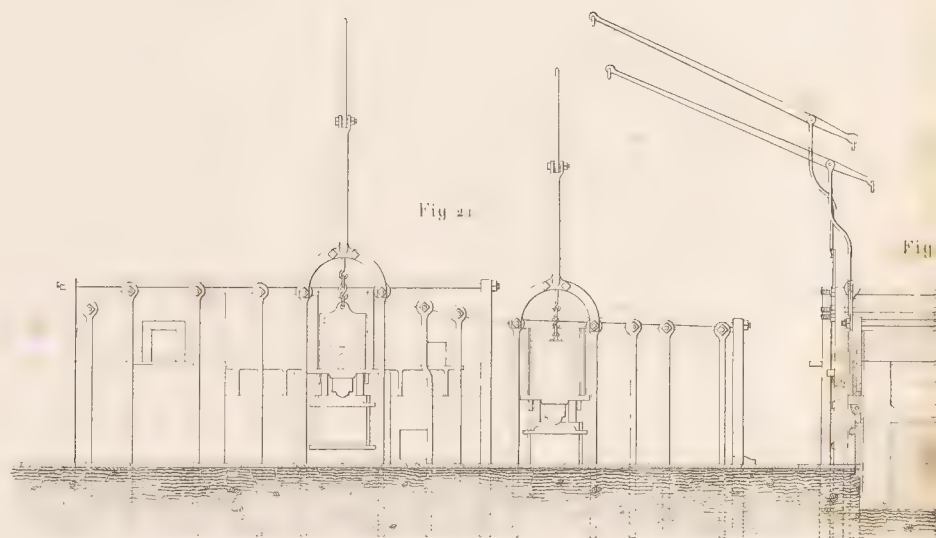


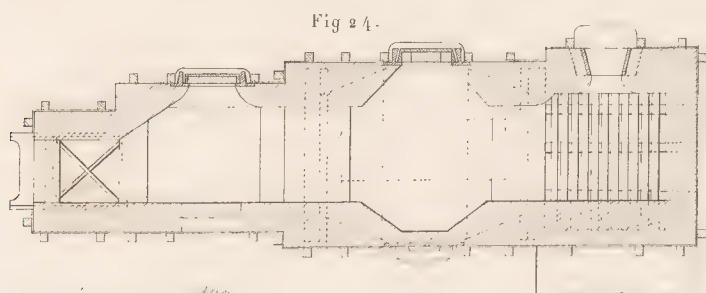
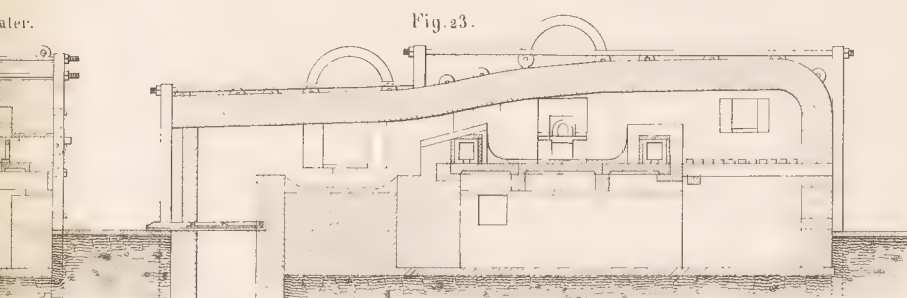
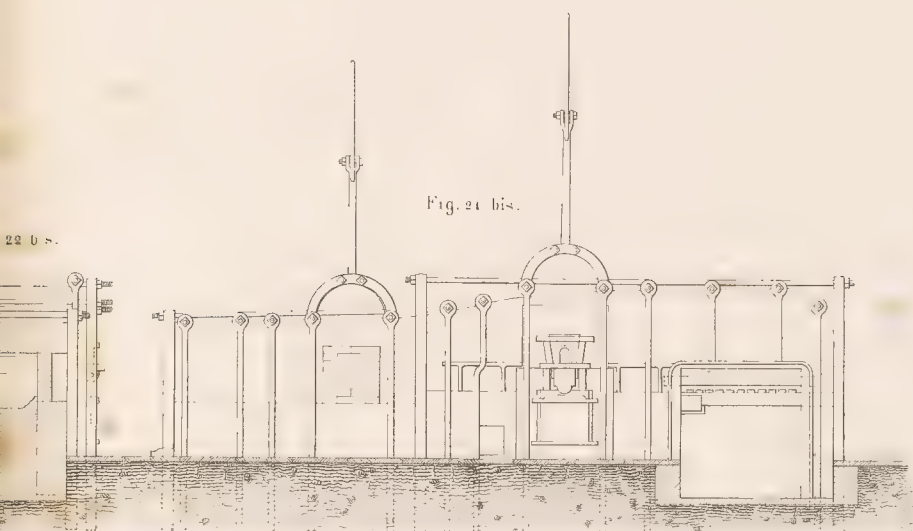
Fig. 29.

90-B-4488

THE CITY OF
LIBRARY





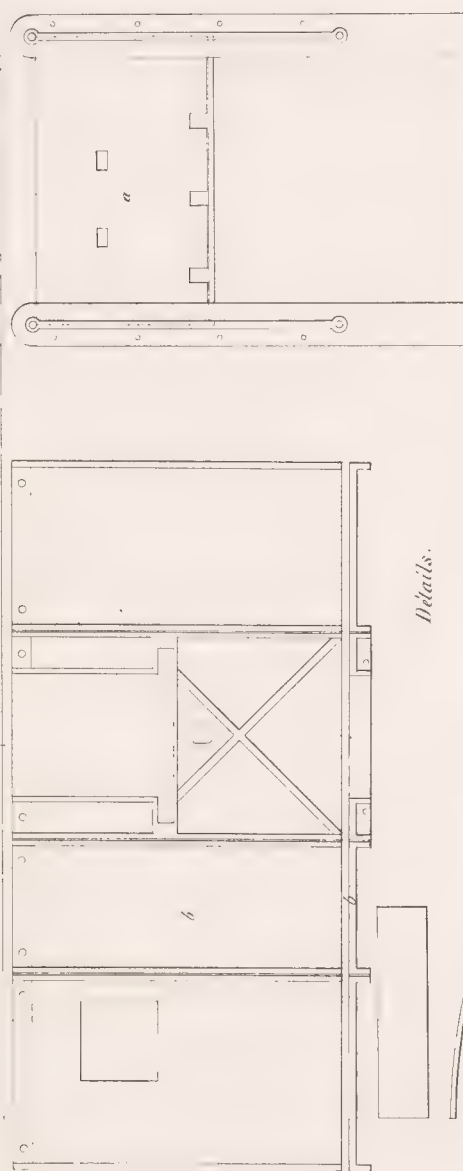


82-8-26

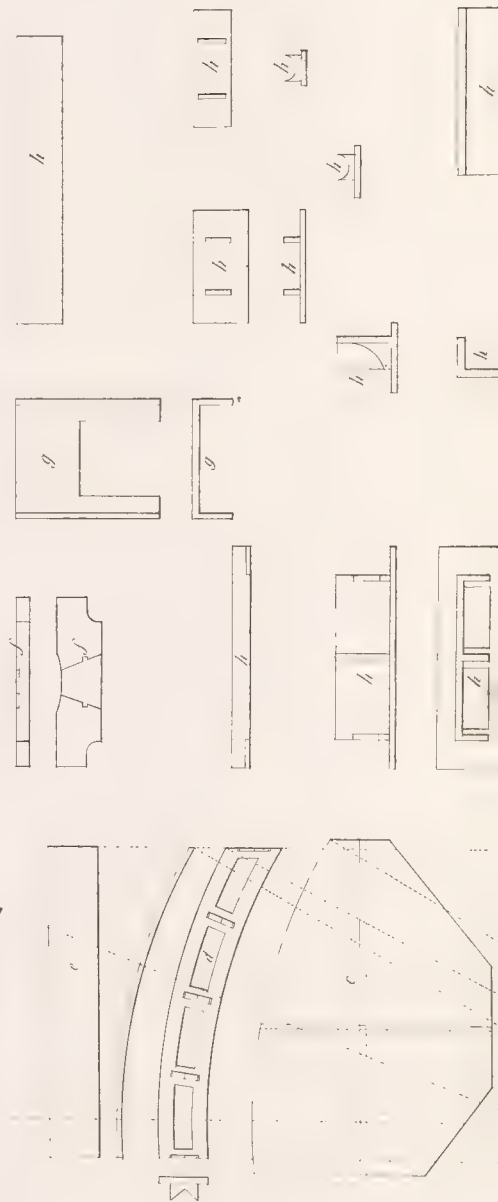
THE CENTER

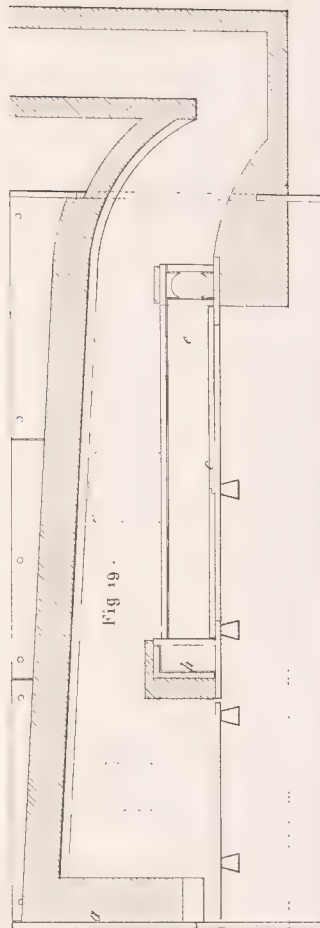
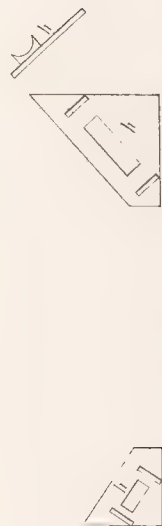


AFFINAGE DE LA FONTE AU FOUR A REVERBERE.

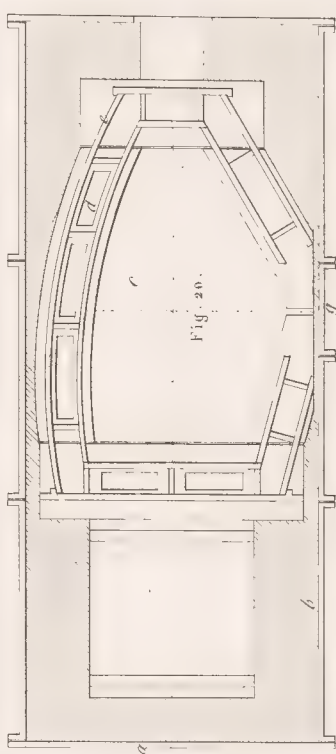


Détails.





*Pour bouillord
à une porte de travail.*



Pour c.3 pour maître.

Extrait et sup' de E. V. de l'édifice.

70-6-4488

70-6-4488



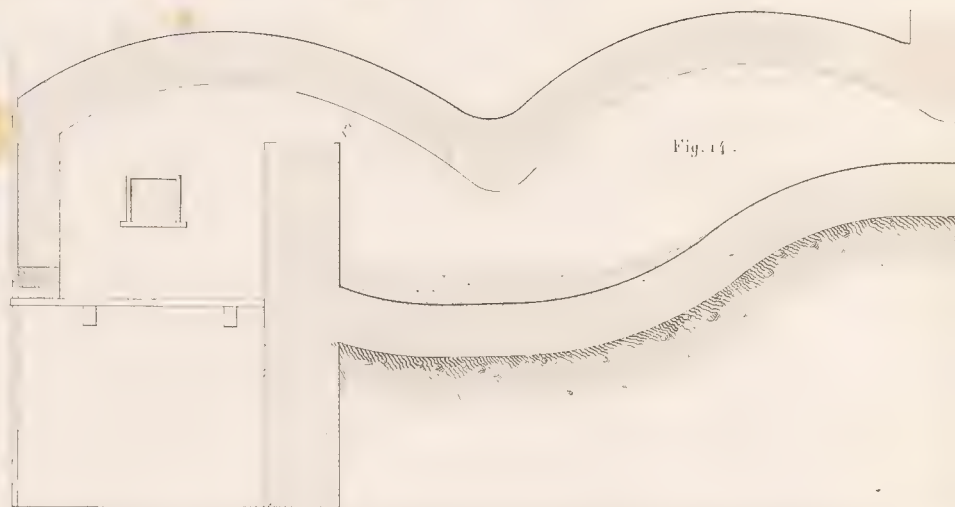


Fig. 14.

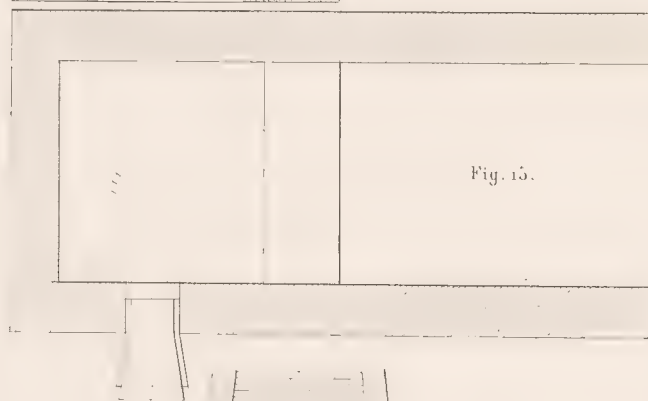


Fig. 15.

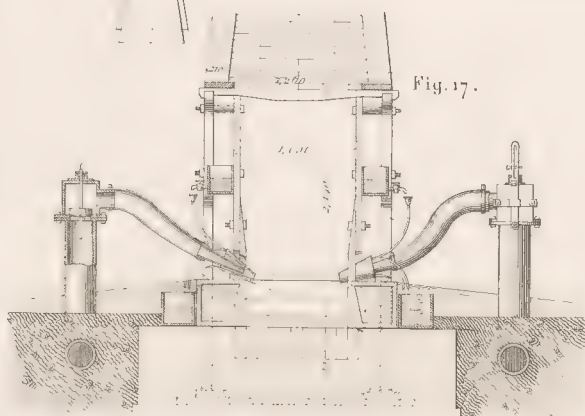


Fig. 17.

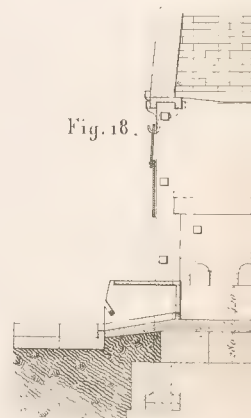


Fig. 18.

Fig. 16 bis.

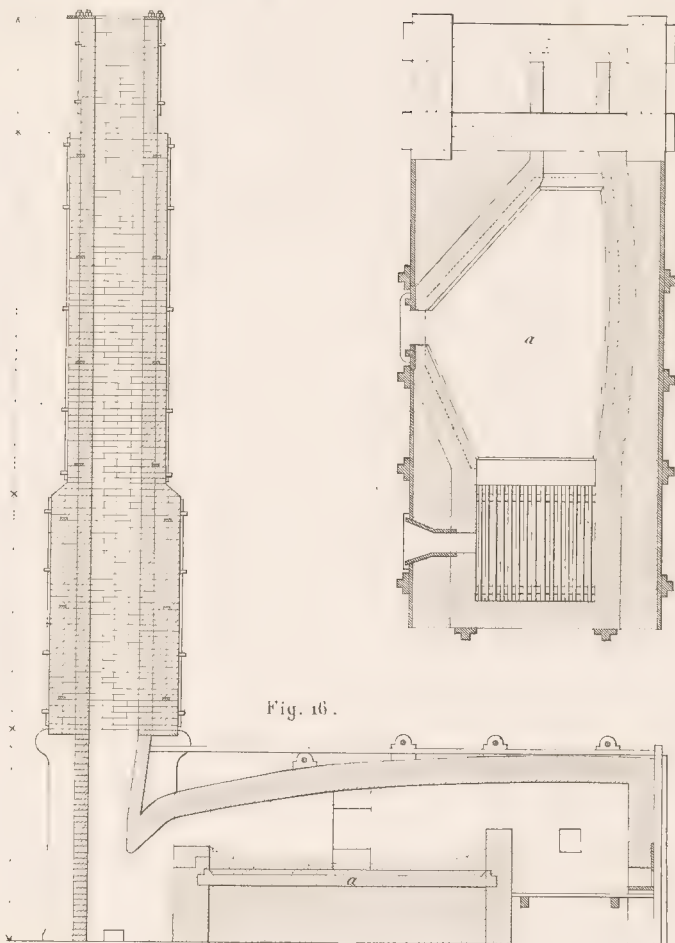


Fig. 16.

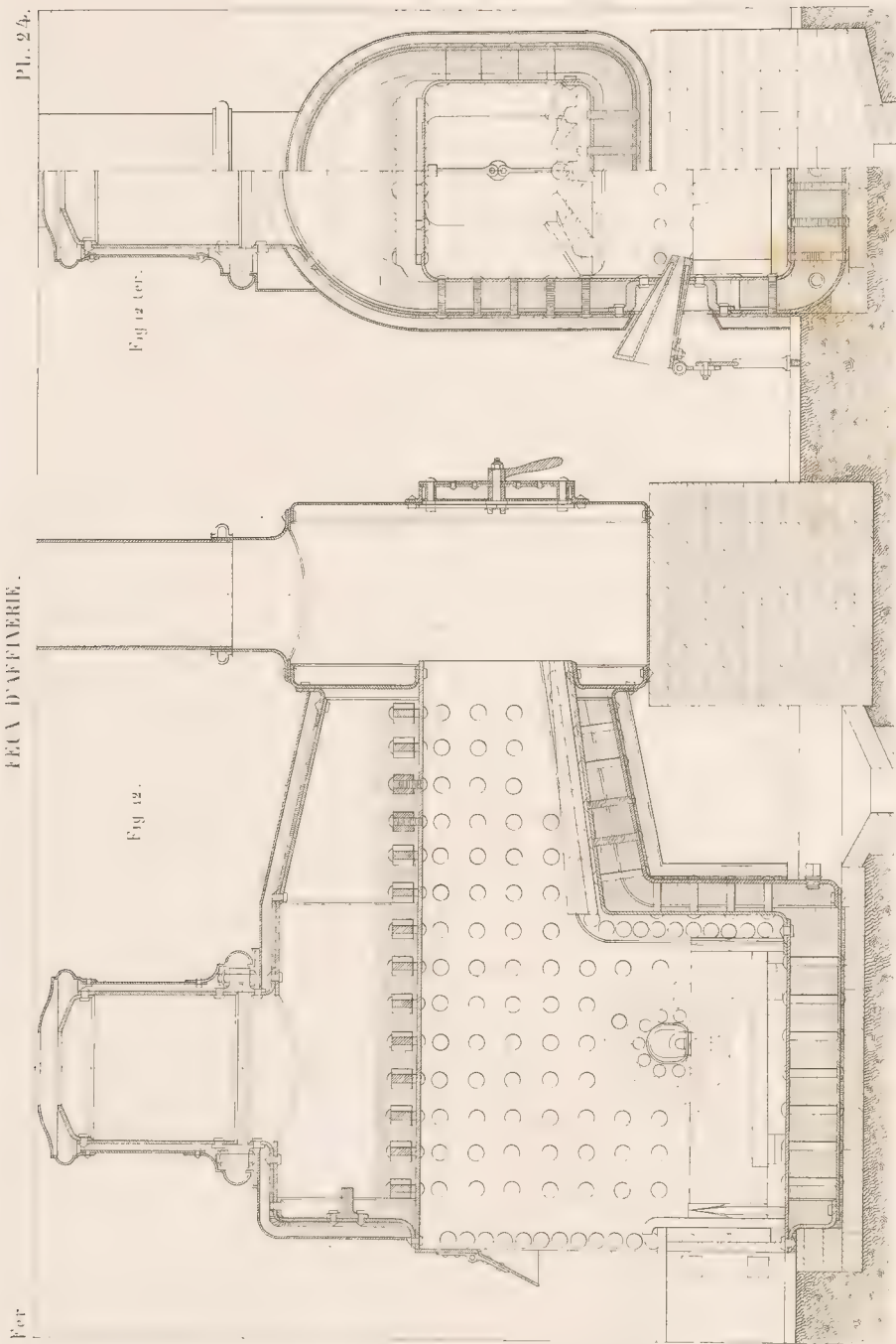
Echelle pour les fig. 15 et 16. 1/35 pour mètre.

Echelle pour les fig. 16 bis 17 et 18. 1/20 pour mètre.

90-8-4488

THE CITY CENTER





Système C. B. Sullivan.

Fig. 12 bis.

Fig. 13 ter.

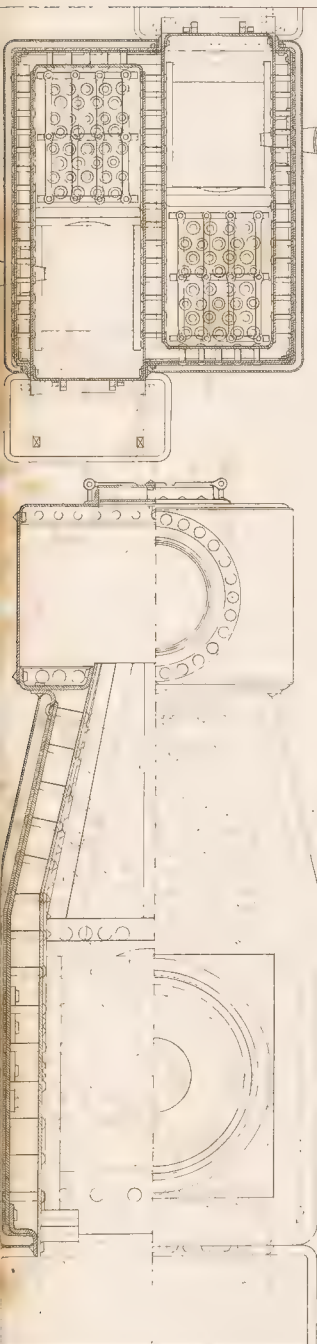


Fig. 13 bis.

Echelle pour les fig. 12, 12 bis et 13 ter 1/20.
 " " " 13, 13 bis et 13 ter 1/20.

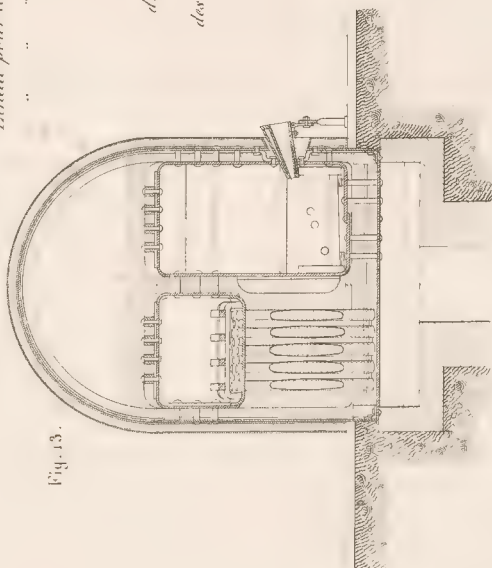
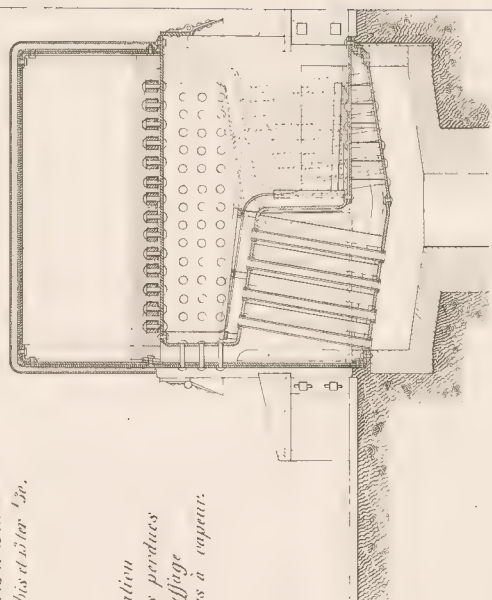


Fig. 13.

Utilisation
 des chaleurs perdues
 au chauffage
 des chaudières à vapeur.



90-B-1148

THE GREAT EAST



L'or

Fig. 6.

Vue de face.

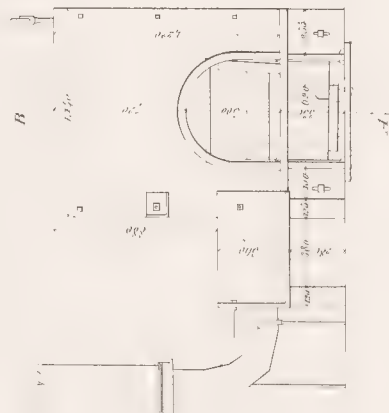


Fig. 7.

Vue de côté de la porte

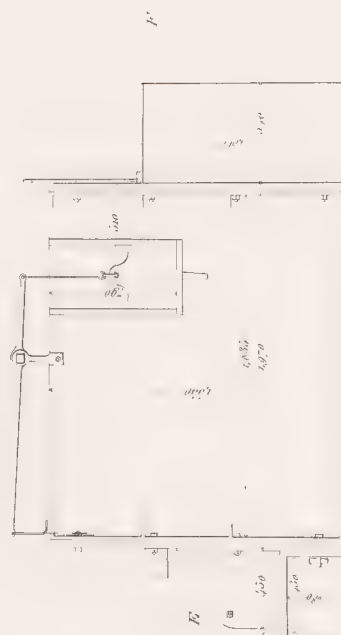


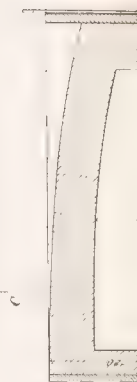
Fig. 8.

Coupe transversale suivant C D.



Fig. 9.

Coupe longitudinale suivant A B.



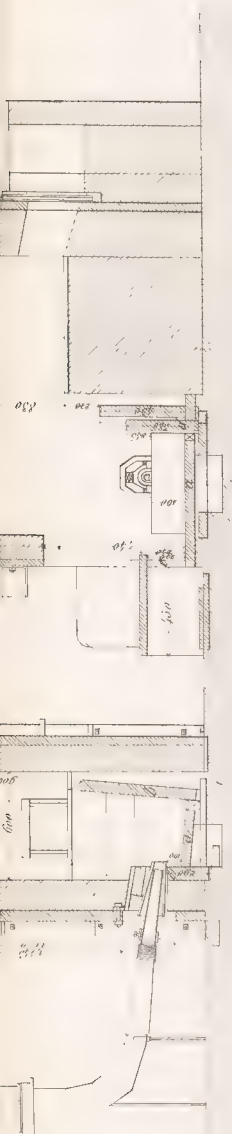


Fig. 11.

Vue de derrière.

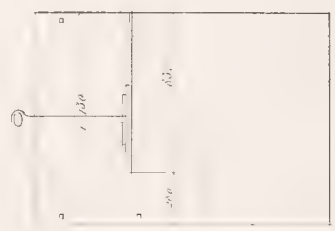


Fig. 10.

Plan en coupe suivant EF.

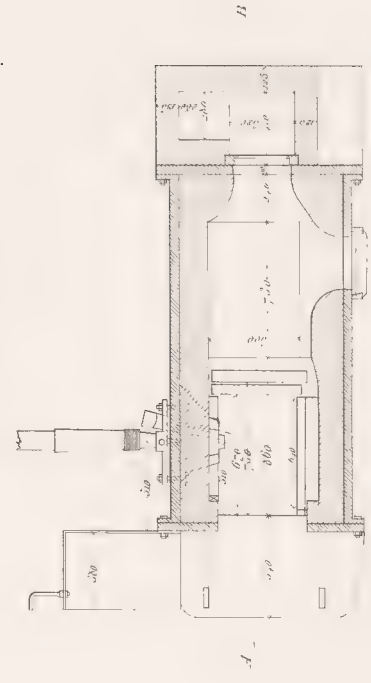


Fig. 10. Plan en coupe suivant EF.

10-B-4088

THE CENTER



Fer.

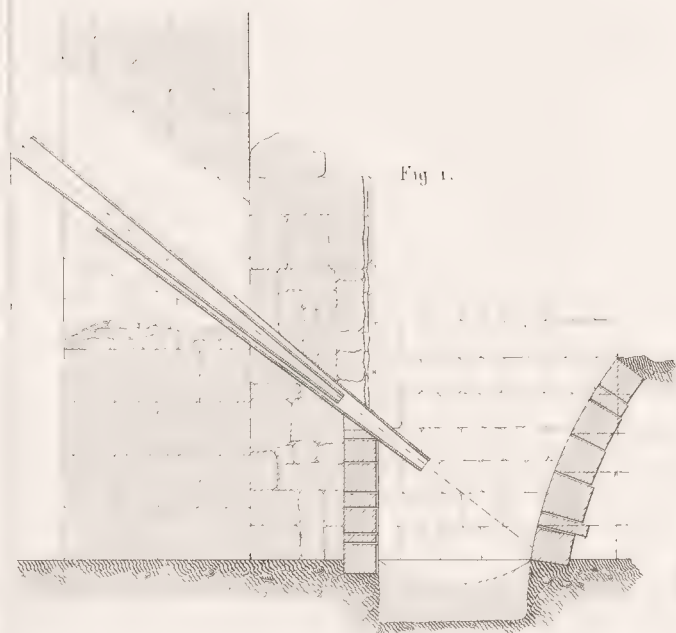
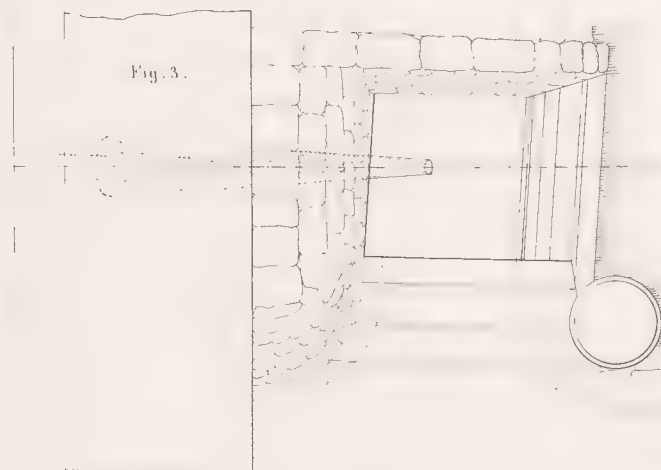
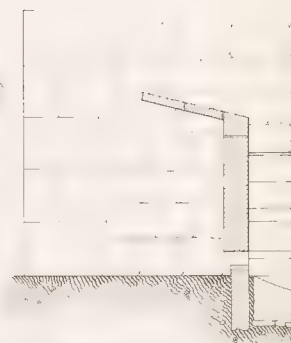
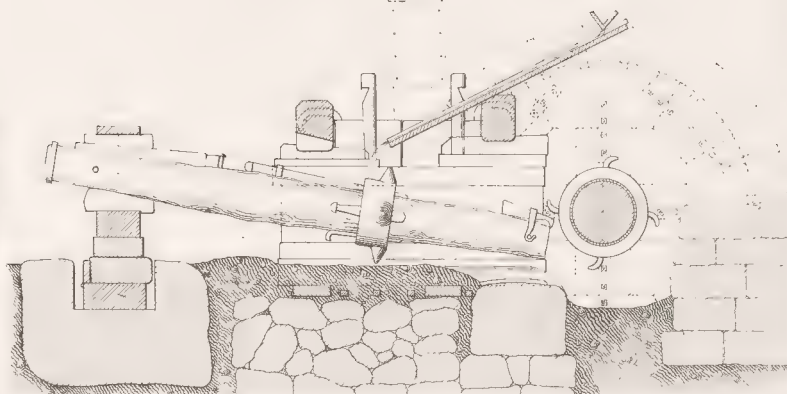
Figur et ma

Fig. 2

*Fig. 4 et sup.*

orteau catalans.

Fig. 4.



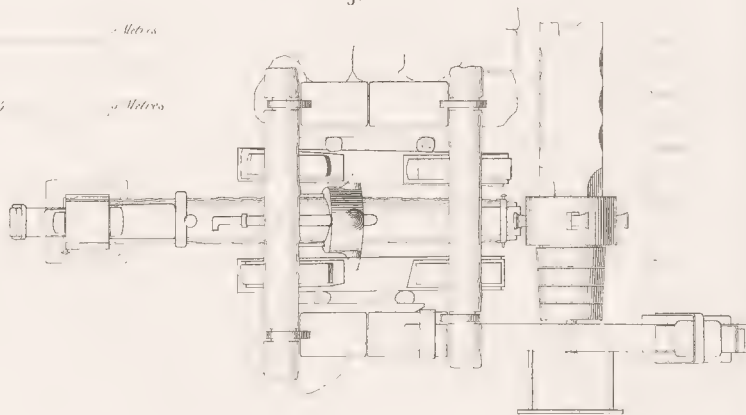
Echelle pour les fig. 4, 5.

1 Mètre

Echelle pour les fig. 4, 5.

1 Mètre

Fig. 5.



du 6 Août 1870.

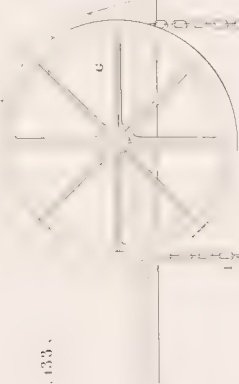
70-6-4018

THE OFFICE OF THE
LIBRARIAN



Fente

Coupe par C D.



Systeme Thomas et Larrus.

Fig. 134.

Coupe verticale par O P.

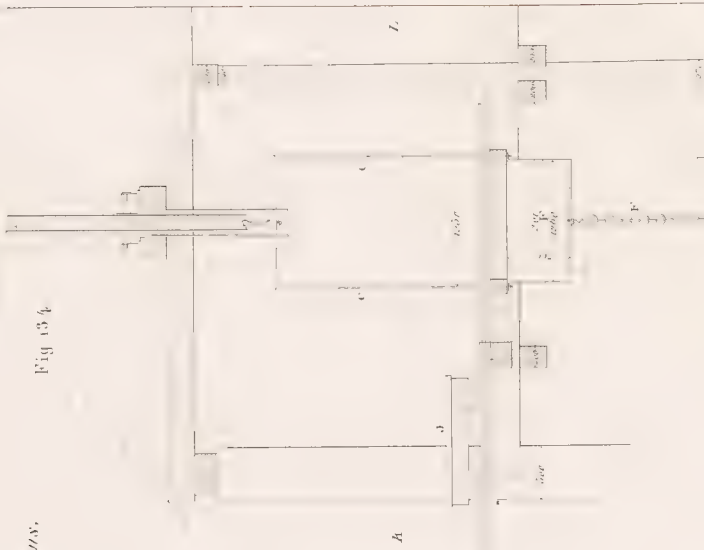
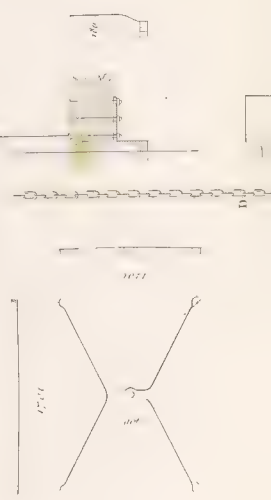


Fig. 135.

Détails.



Plan, Coupe par A B.

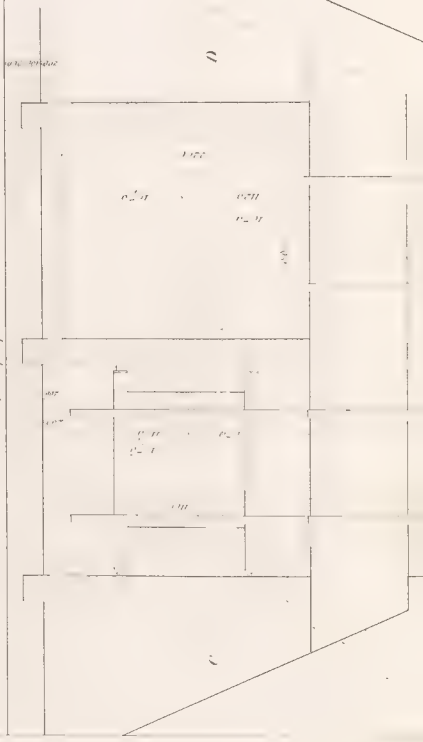


Fig. 137.

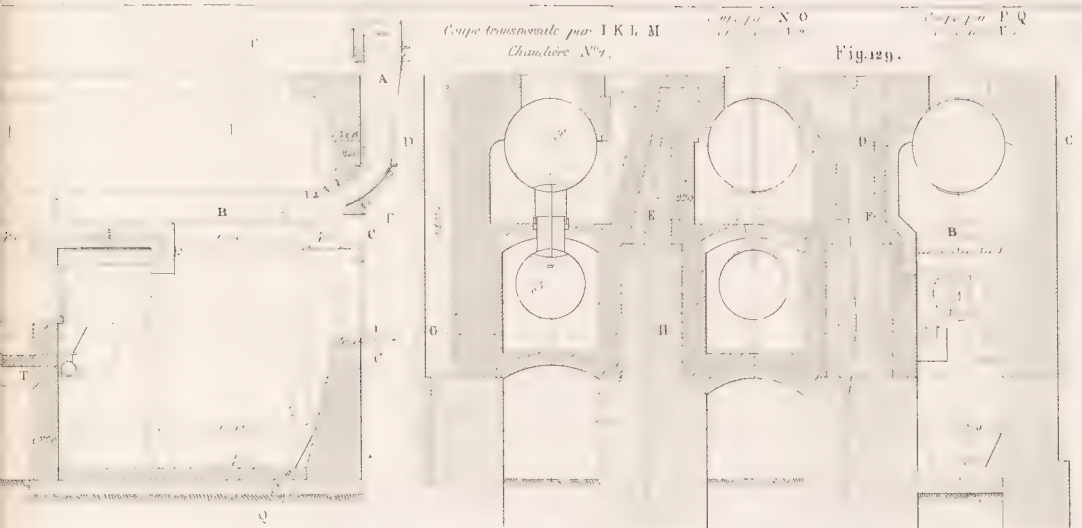
90-B-4488

THE CITY CENTER

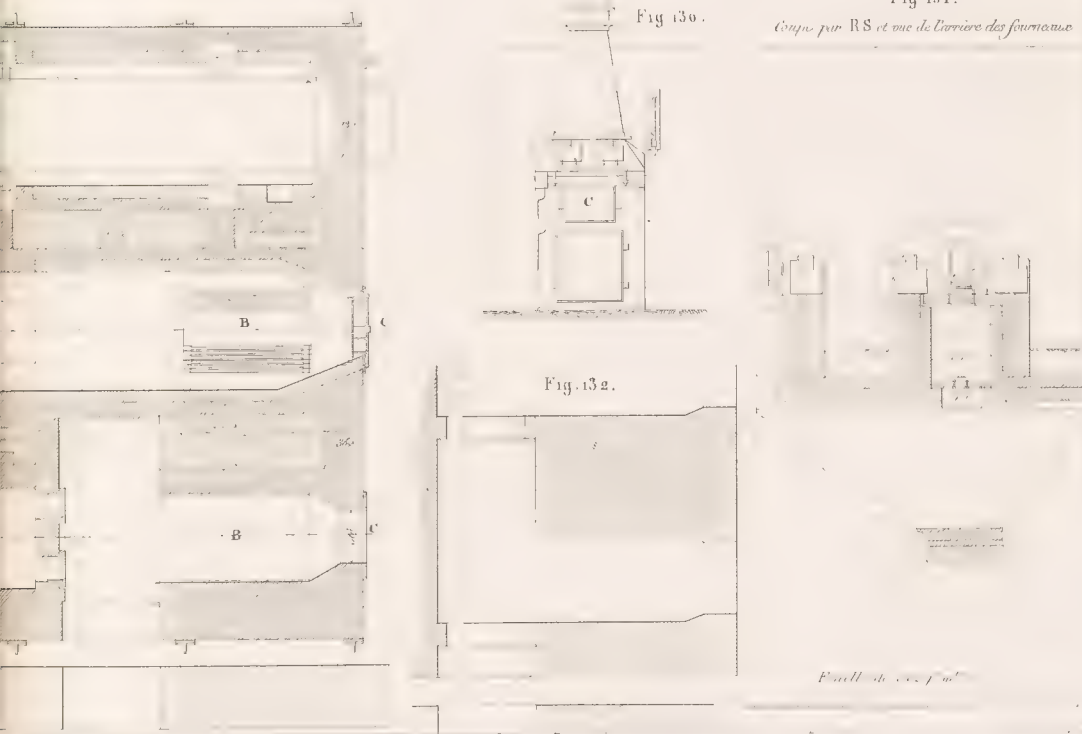




Fig. 128.

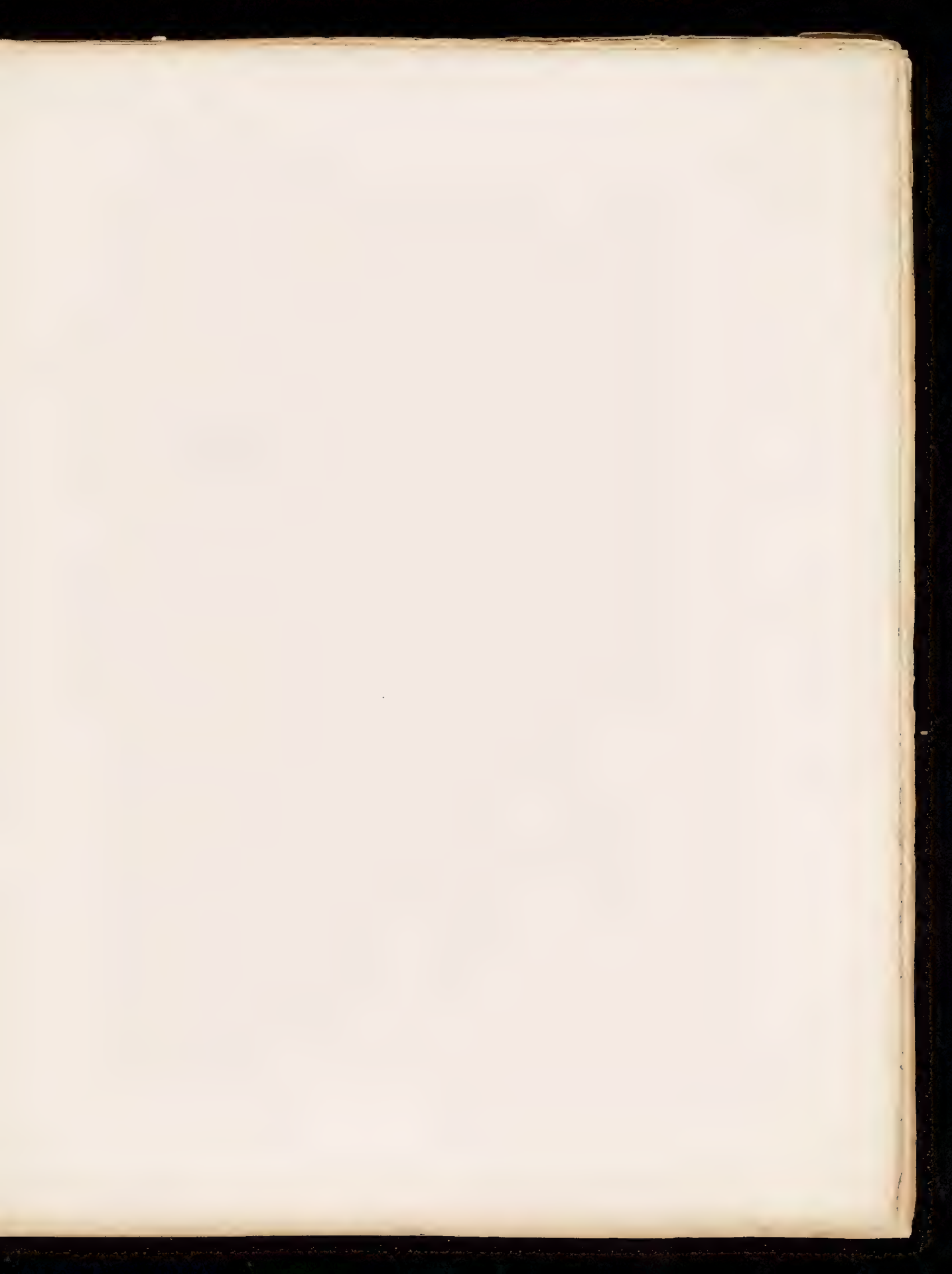


Système Thomas et Laurens.



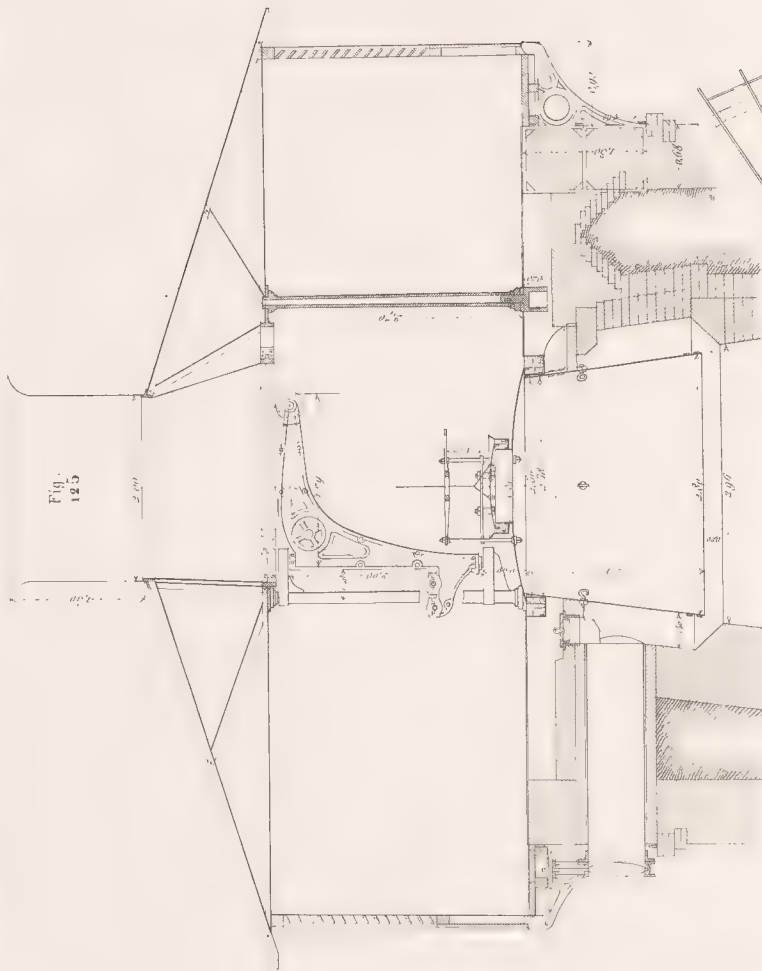
90-6 4411

THE G. W. CENTER



UTILISATION DES GAZ COMBUSTIBLES.

Ponté.



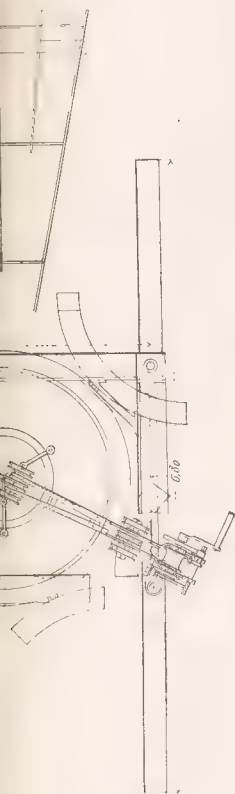
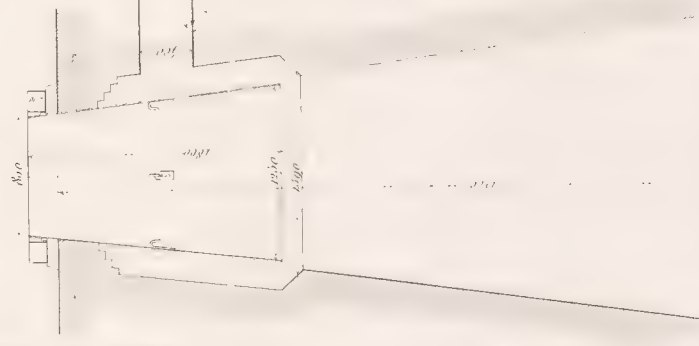


Fig.
121.



Système Thomson et Laurens.

Fig. 122.

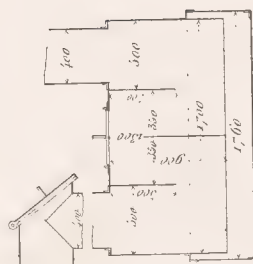


Fig. 123.

Fig. 124.

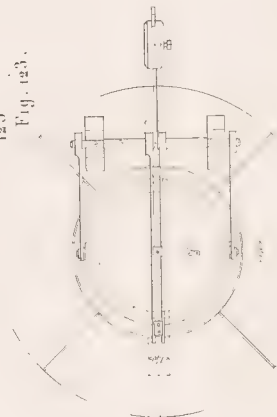


Table des fig. 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200.

8844-9-06

THE CITY CENTER
L. N. Y.



Fig. 108.

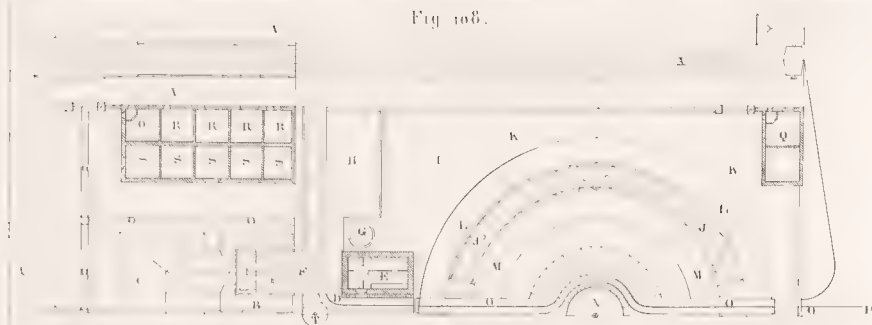


Fig. 109.

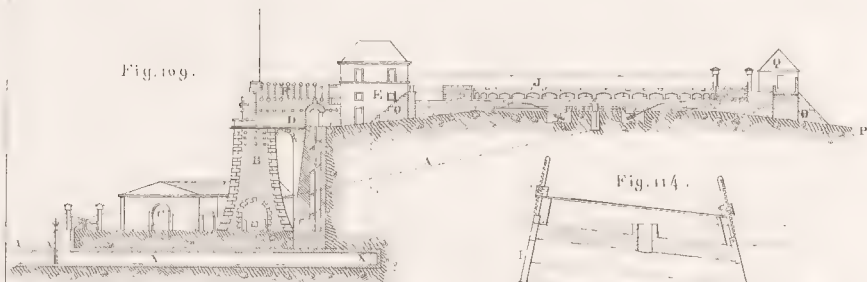


Fig. 114.

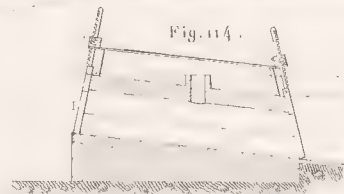


Fig. 115.

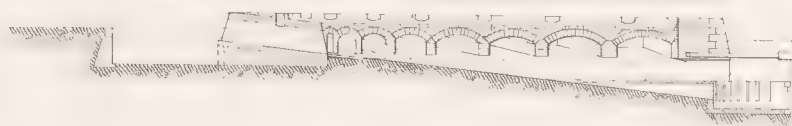


Fig. 116.



Fig. 113.



Fig. 118.

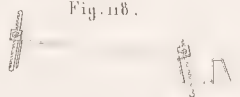


Fig. 117.



Echelle des fig. 108, 109. 1/2002 pour metre
 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200 ..
 210, 220, 230, 240, 250, 260, 270, 280, 290, 300 ..

Fig. 112.

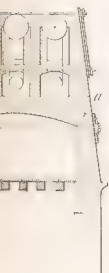


Fig. 110.

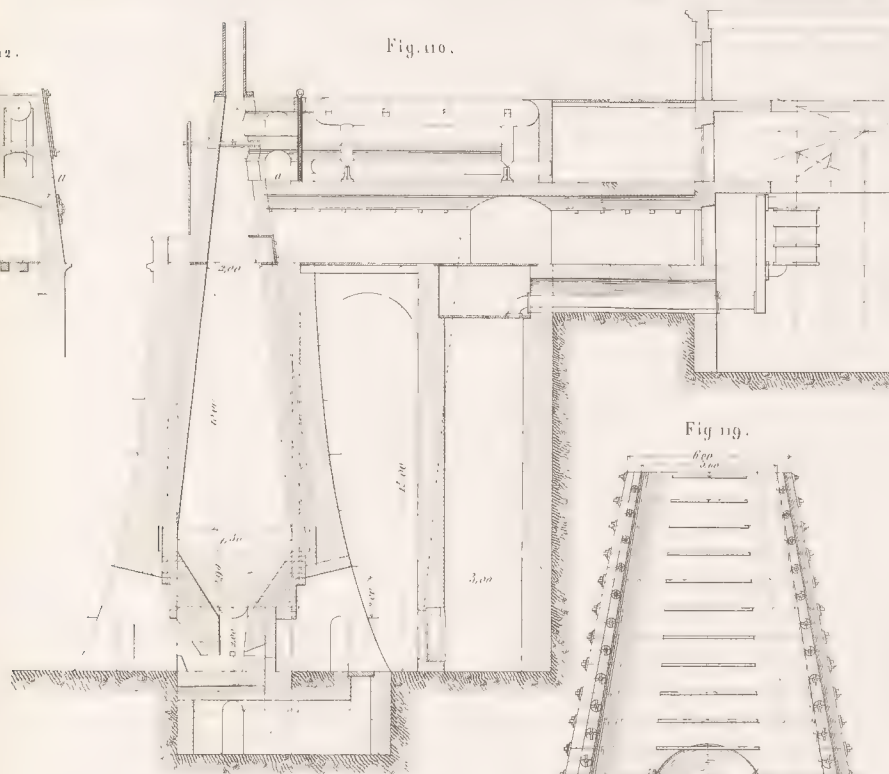
*Système C. R. Julien*

Fig. 119.

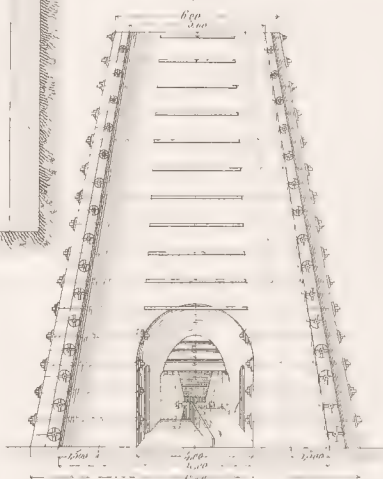
*Système Communeau*

Fig. 111.

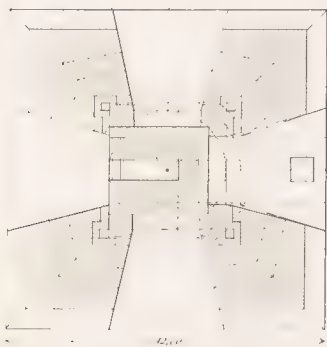
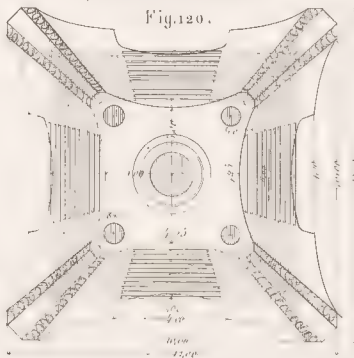
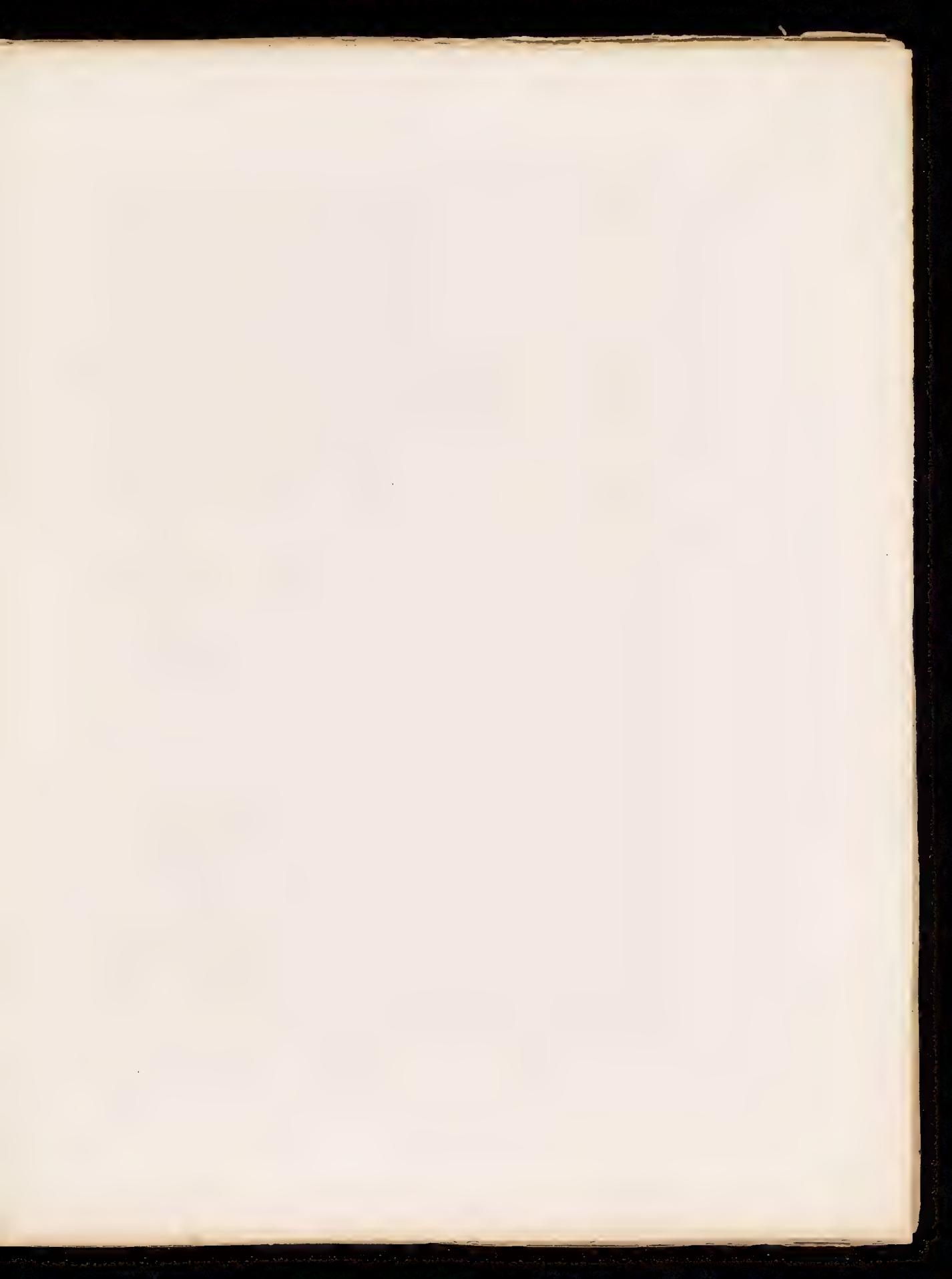


Fig. 120.



70-B-4-88

RESEARCH CENTER
NEW YORK



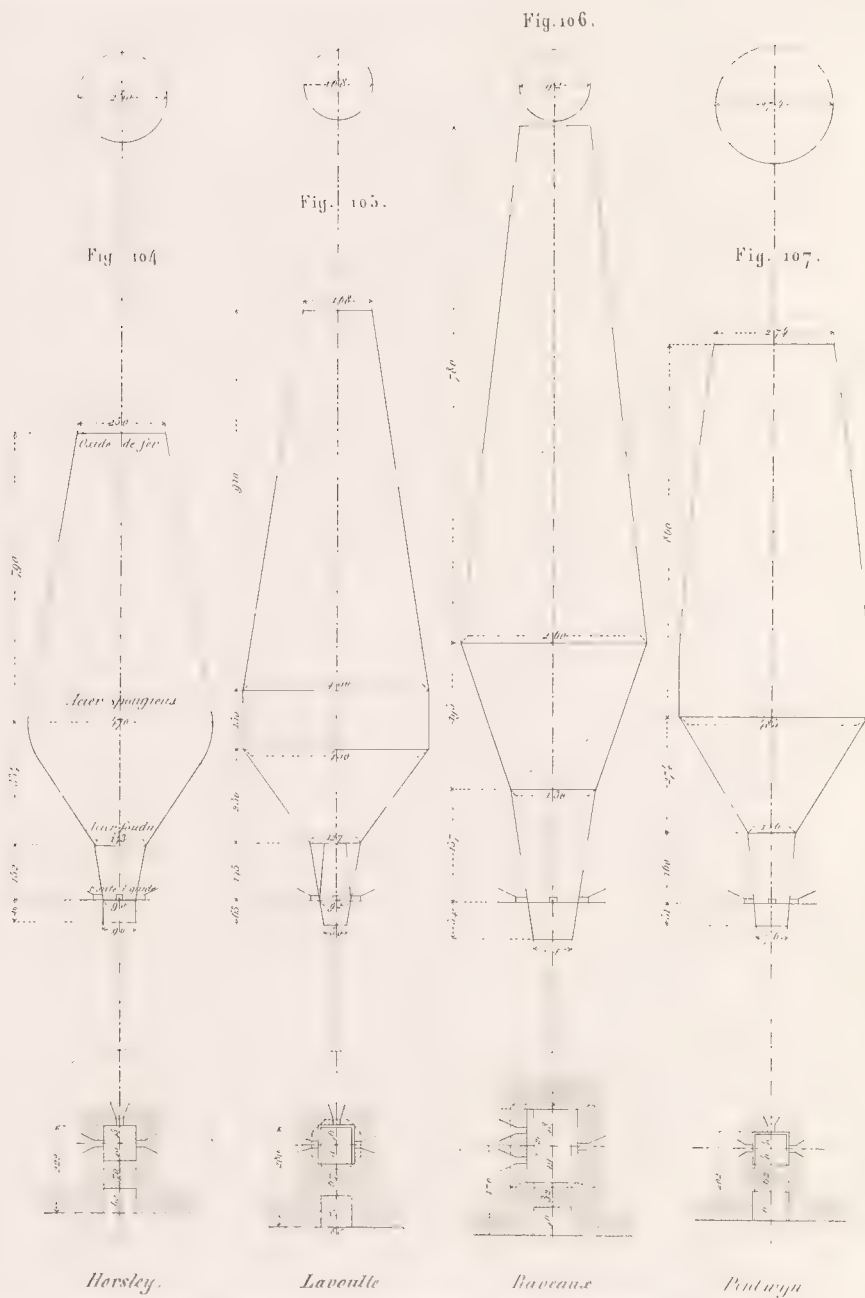


Fig. 100.



Fig. 101.

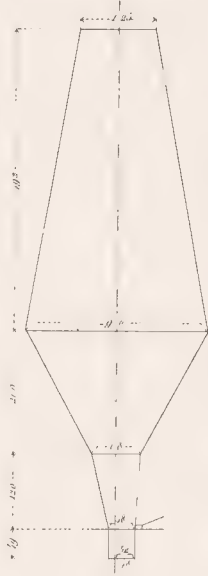
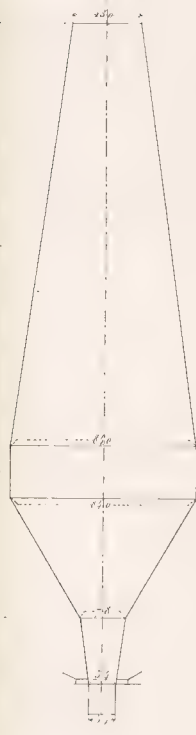


Fig. 102.



Fig. 103.



Hayange

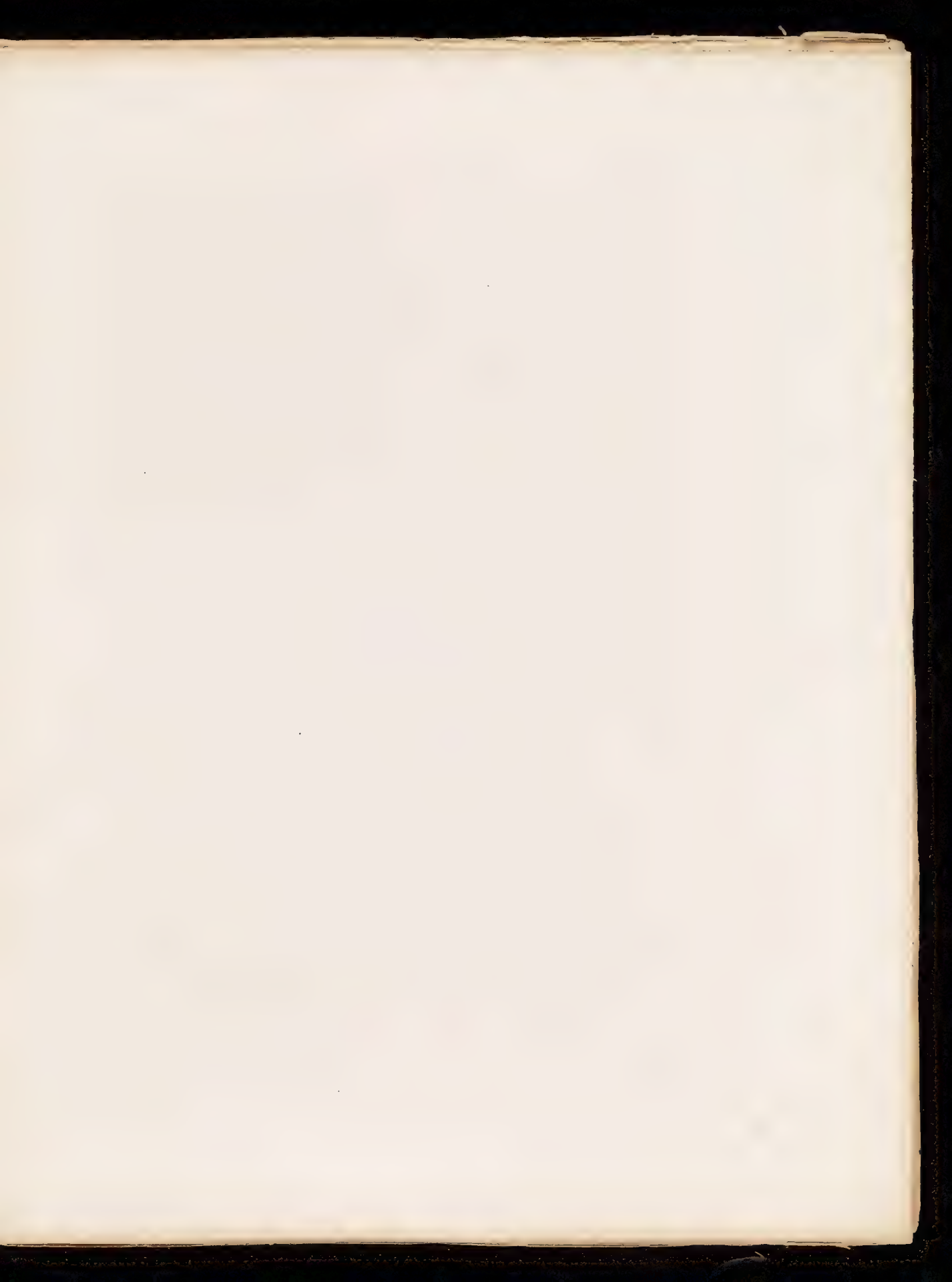
Barz

Oberachstadt

Chateau vitruv

90-B-4418

U.S. DEPT. OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535



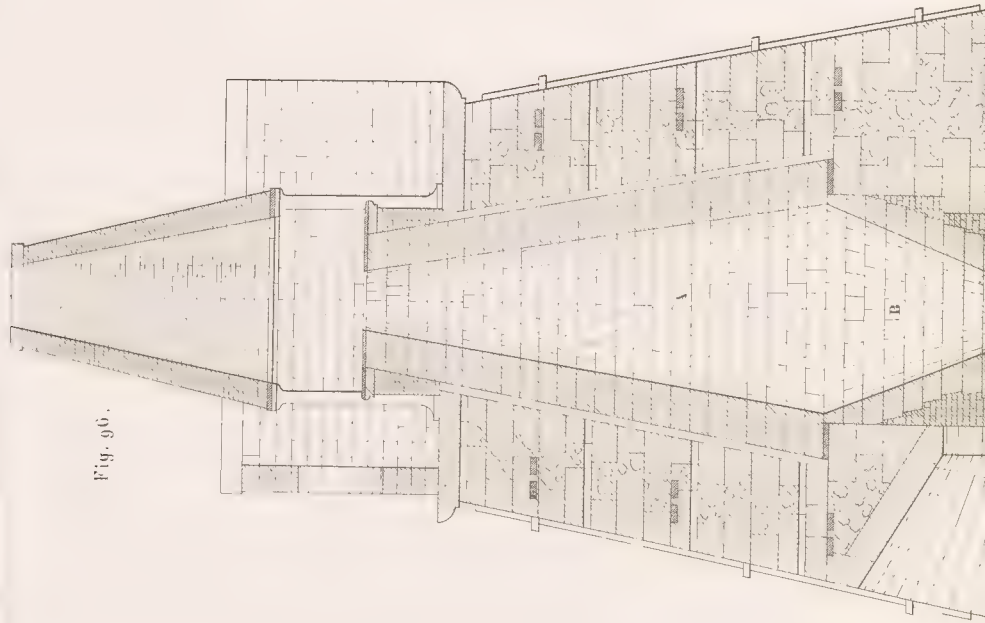


Fig. 96.

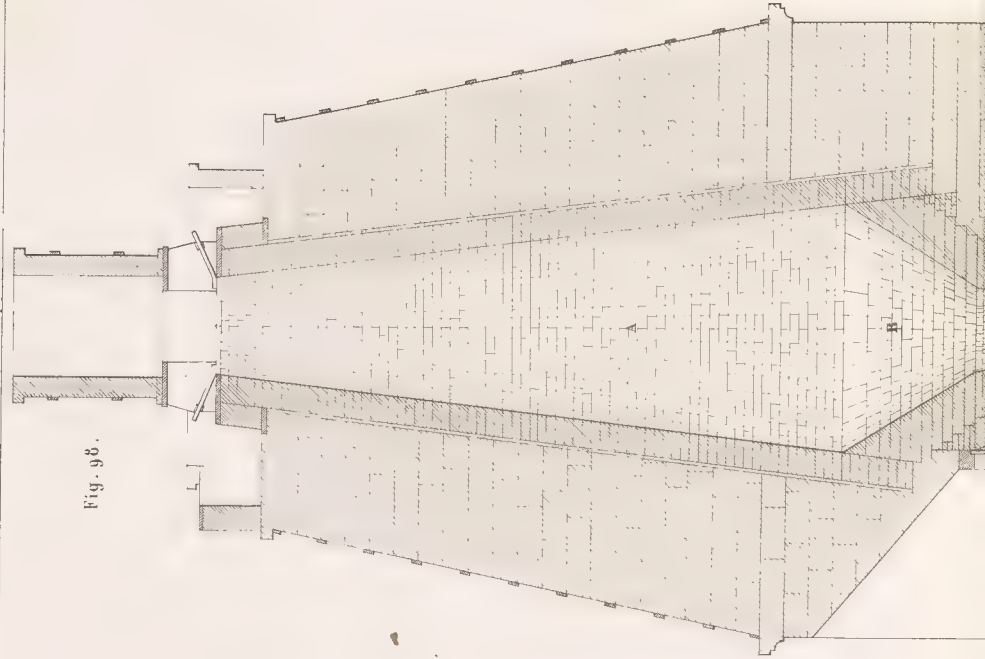


Fig. 98.

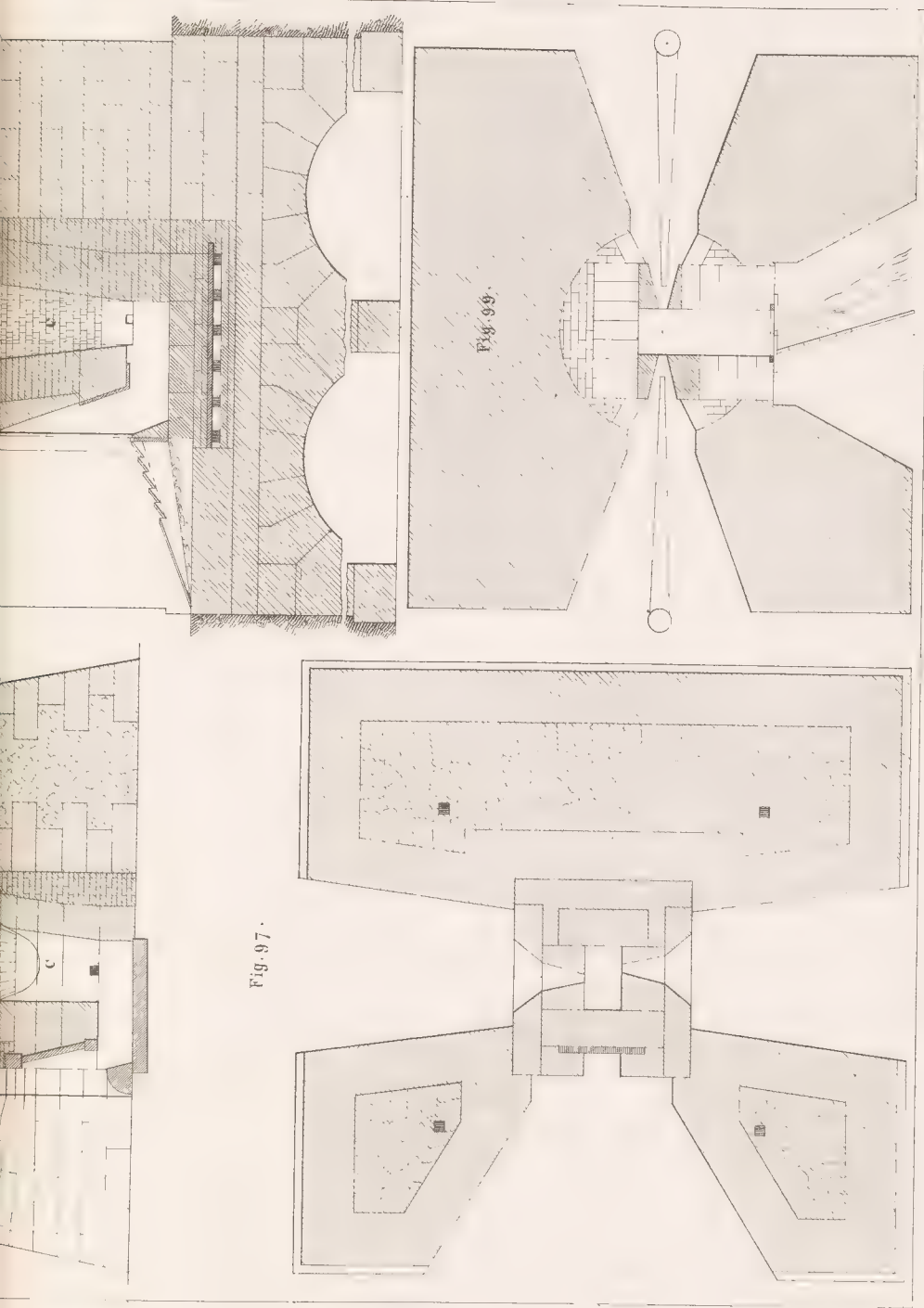


Fig. 97.

Plan et coupe de l'édifice à figure.

90-B-4488

CHINESE LITERATURE



Coup. par I B

Fig. 87.

Coup. par

A. L. II

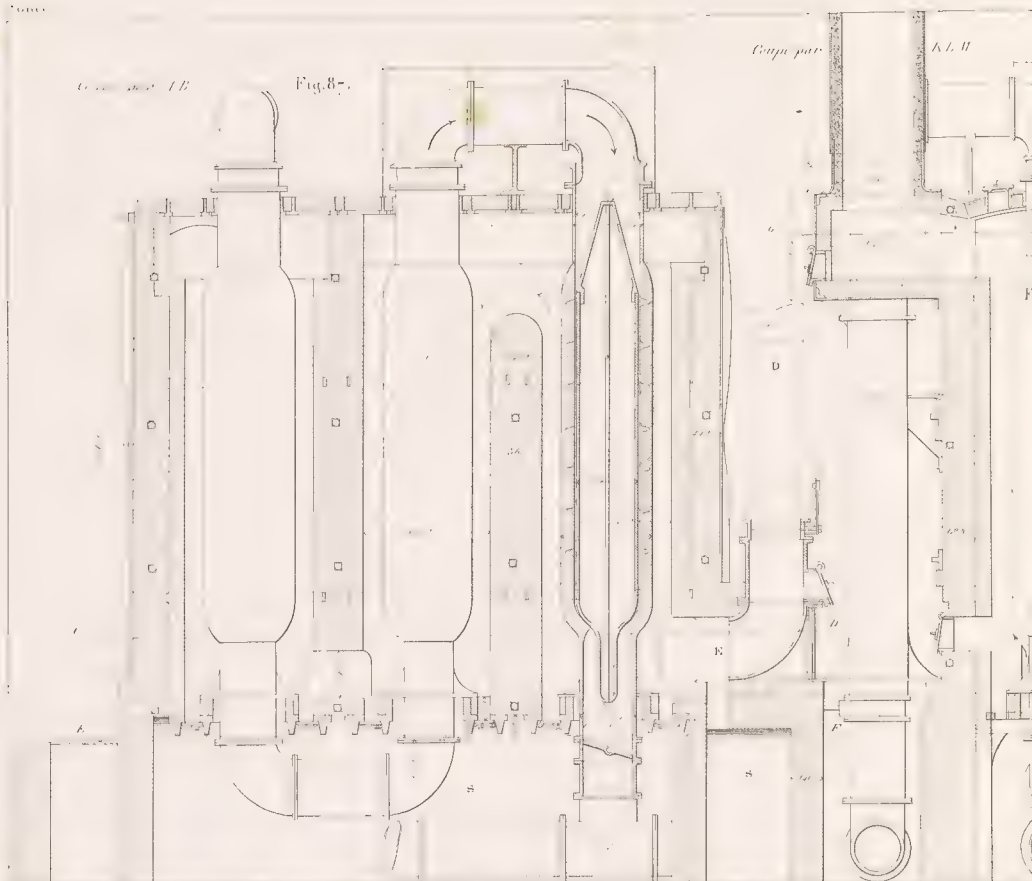
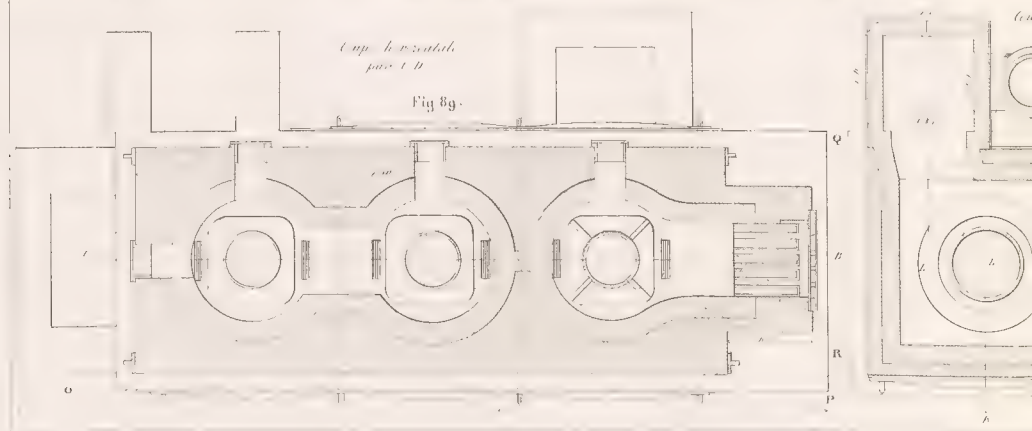
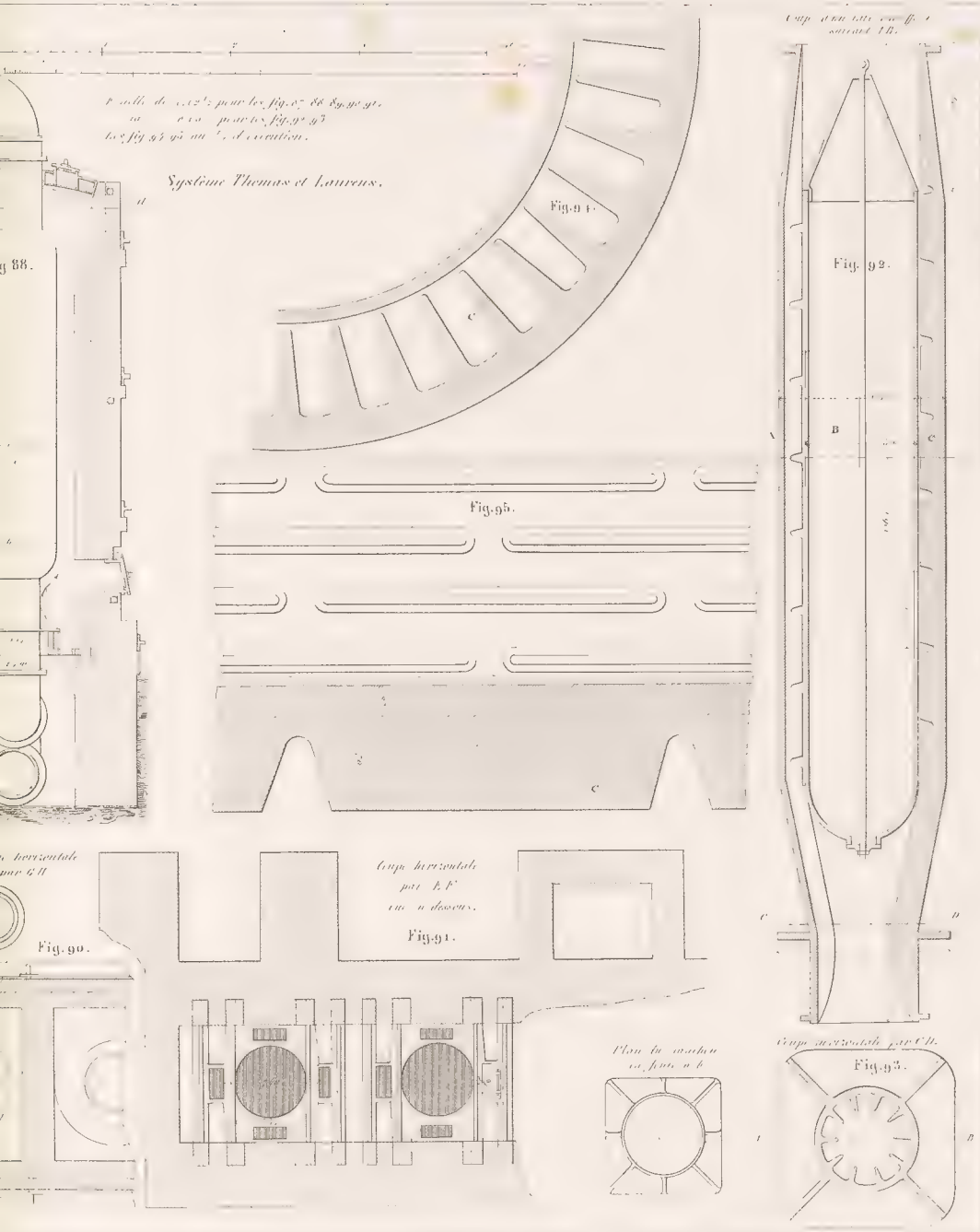
Coup. horizontal
par I D

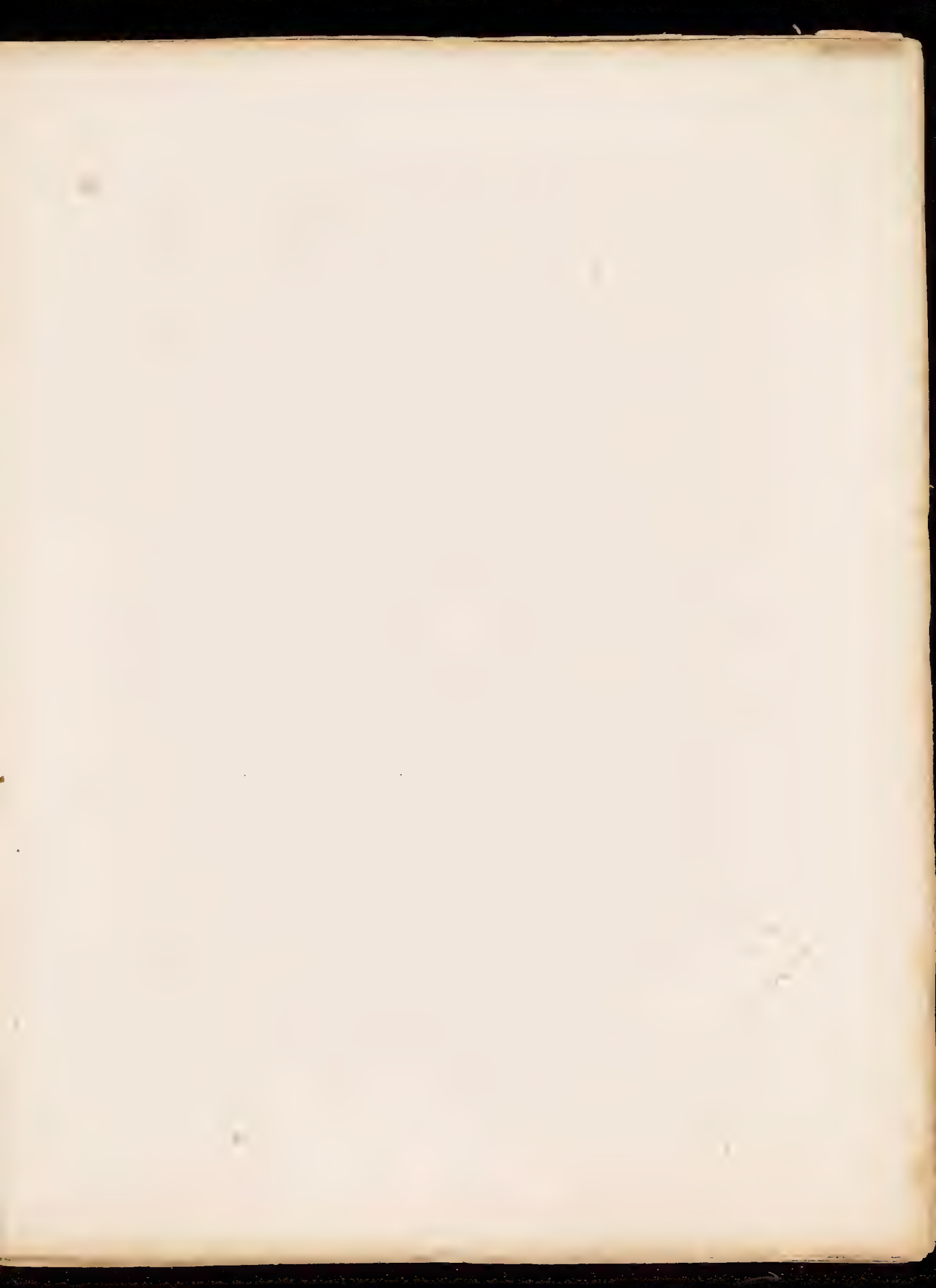
Fig. 89.



Système Thomas et Laurens.

70 B. 4488

THE GIFTY GIVER
L



Fonte

RÉGULATEURS A AIR

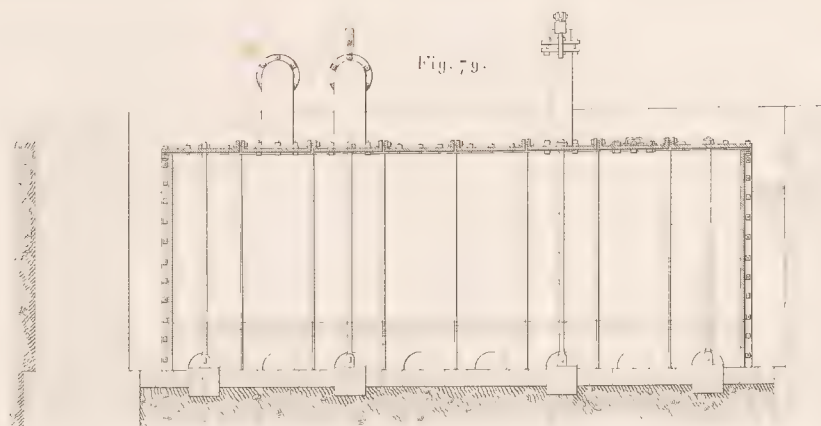


Fig. 79.

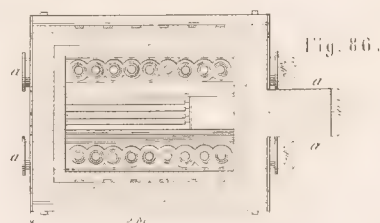
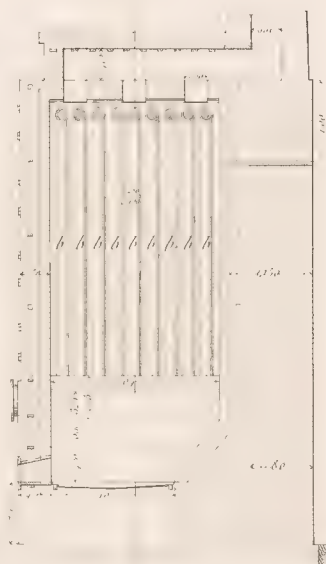


Fig. 86.

Fig. 85.



Appareil Calder.

Fig. 84

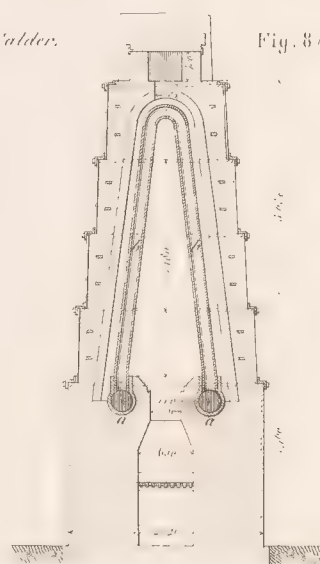


Fig. 80.

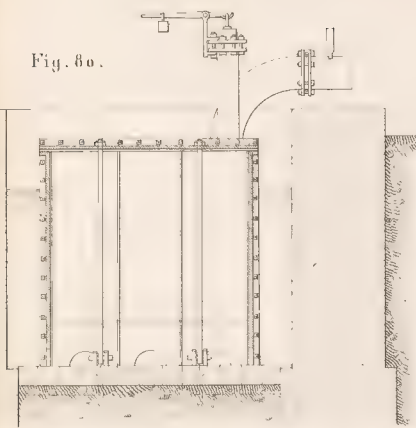
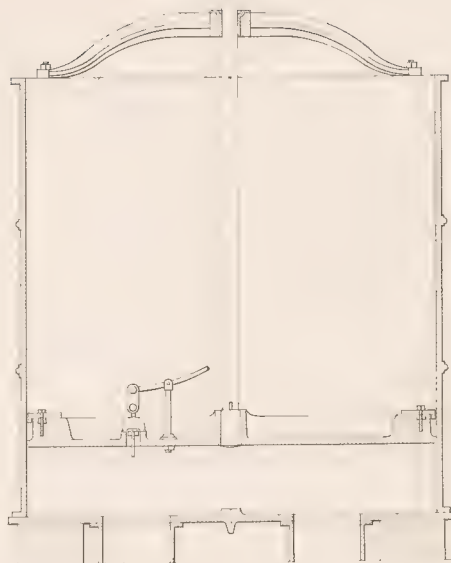


Fig. 81.



Ech. pour les fig. 79, 80. 1 2 3 4 mètres

Ech. pour les fig. 81, 82, 83. 1 2 mètres

Ech. pour les fig. 84, 85, 86. 1 3 5 mètres

Fig. 83.

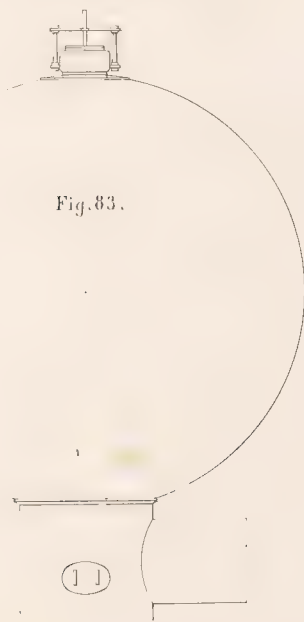
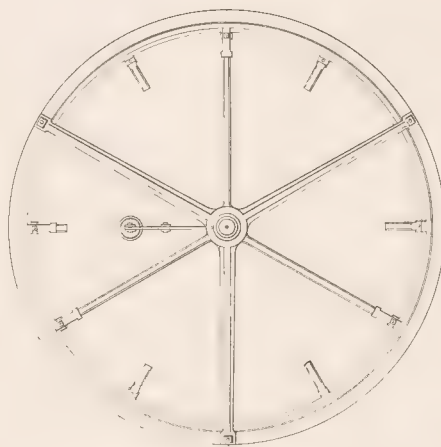


Fig. 82.



90-8 4488

THE CITY CENTER



Fig 5b. Coupe verticale suivant A B.

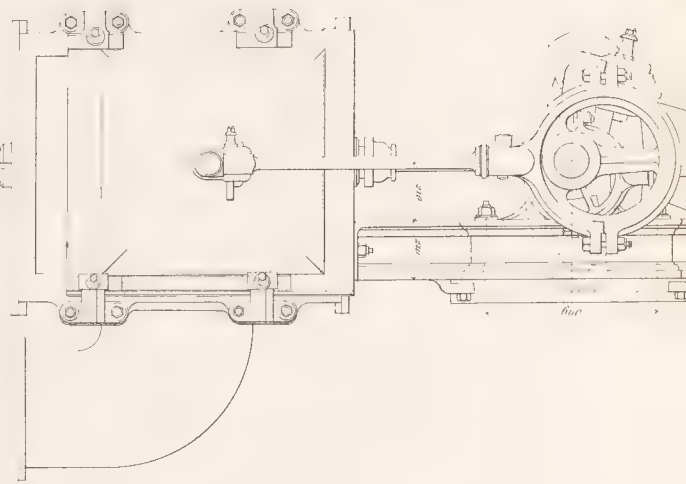
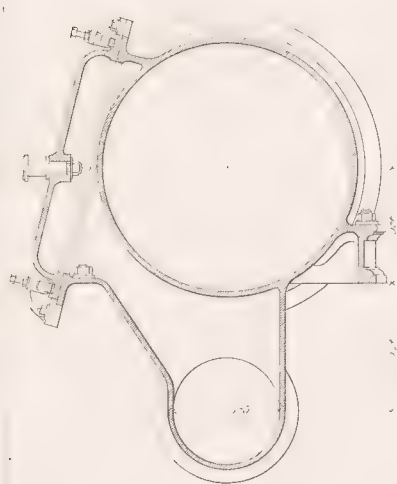
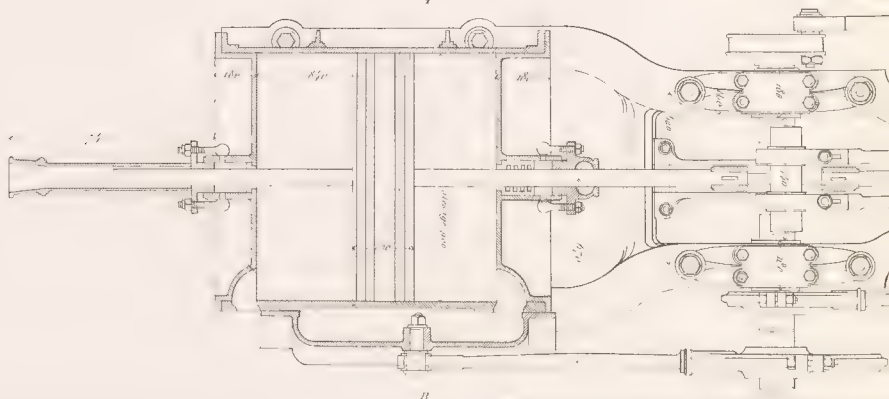


Fig 5b. Plan et coupe



75. Elevation

Fig. 77. Coupe verticale boisée
suivant C D E F

totale du bâton 1^{er} 815

horizontale par l'axe des cylindres

Reluctant 128• *Mitlen*

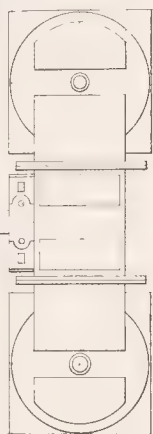
er - her - her

70-43 of 488

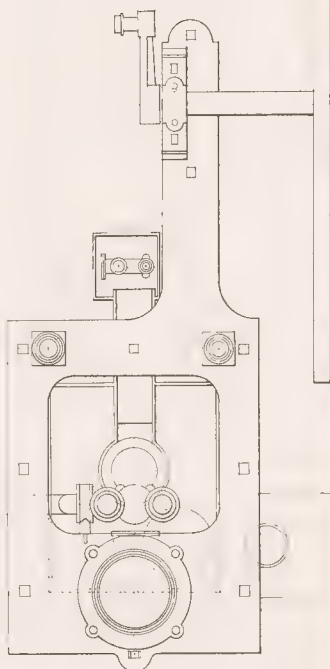
THE NEW YORK PUBLIC LIBRARY
ASTOR LENOX TILDEN FOUNDATION
1895



Fig. 74.



1/1000



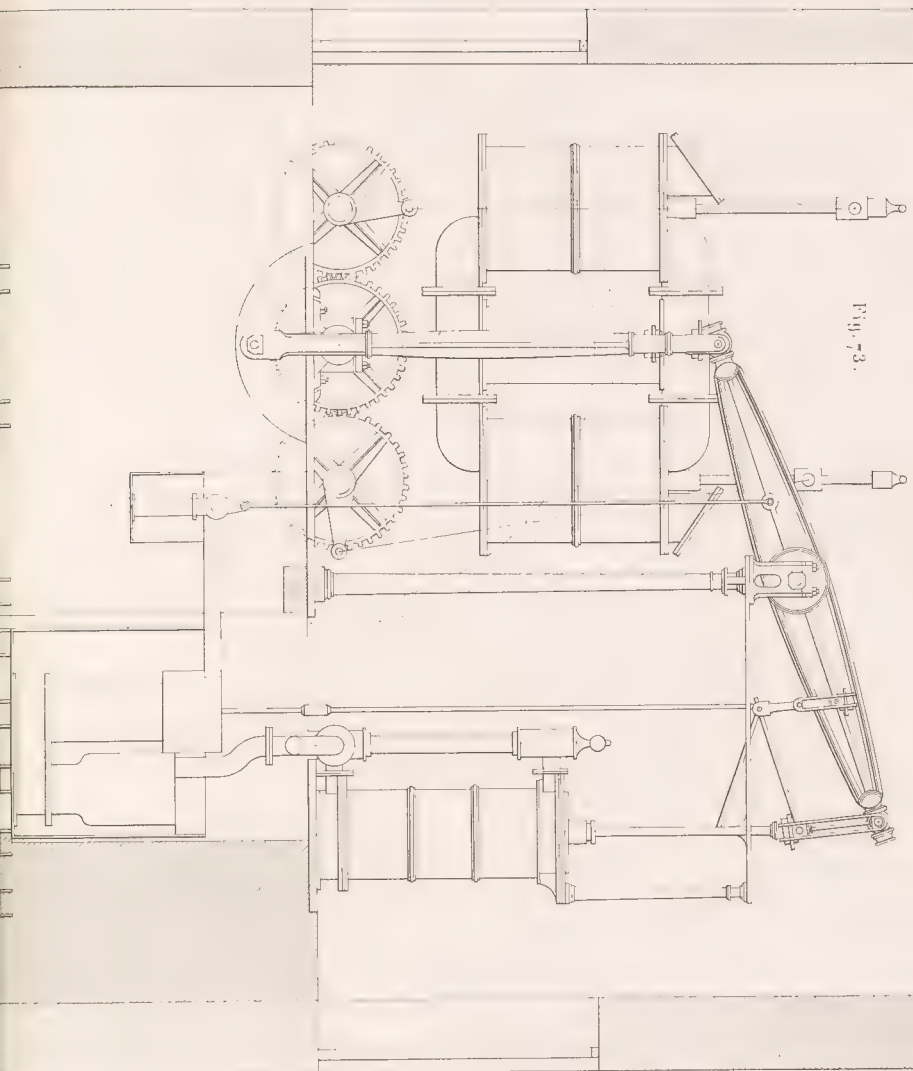
Калибр и прибор для измерения

Fonte.

SOL FILLERS.

Pl. 12.

Fig. 3.



70.8 4488

THE
LIBRARY
OF THE
MUSEUM
OF
NATURAL
HISTORY
OF
THE
CITY
OF
NEW
YORK



VENTILATEURS À SOUFRE.

Pl. II.

Système Hardier.

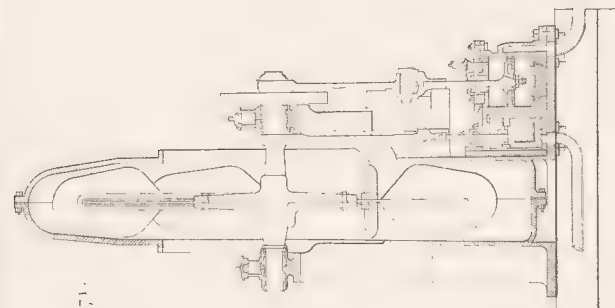


Fig. 71.

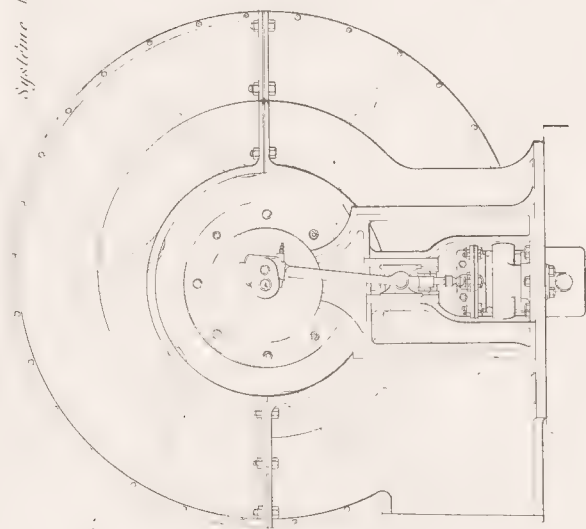


Fig. 70.

Echelle 1/20.

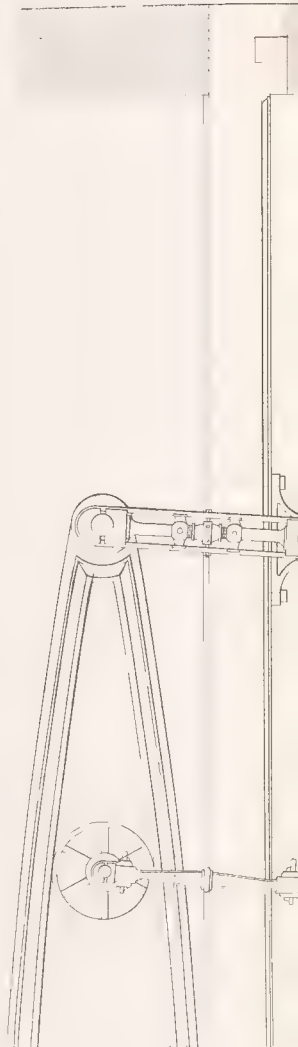
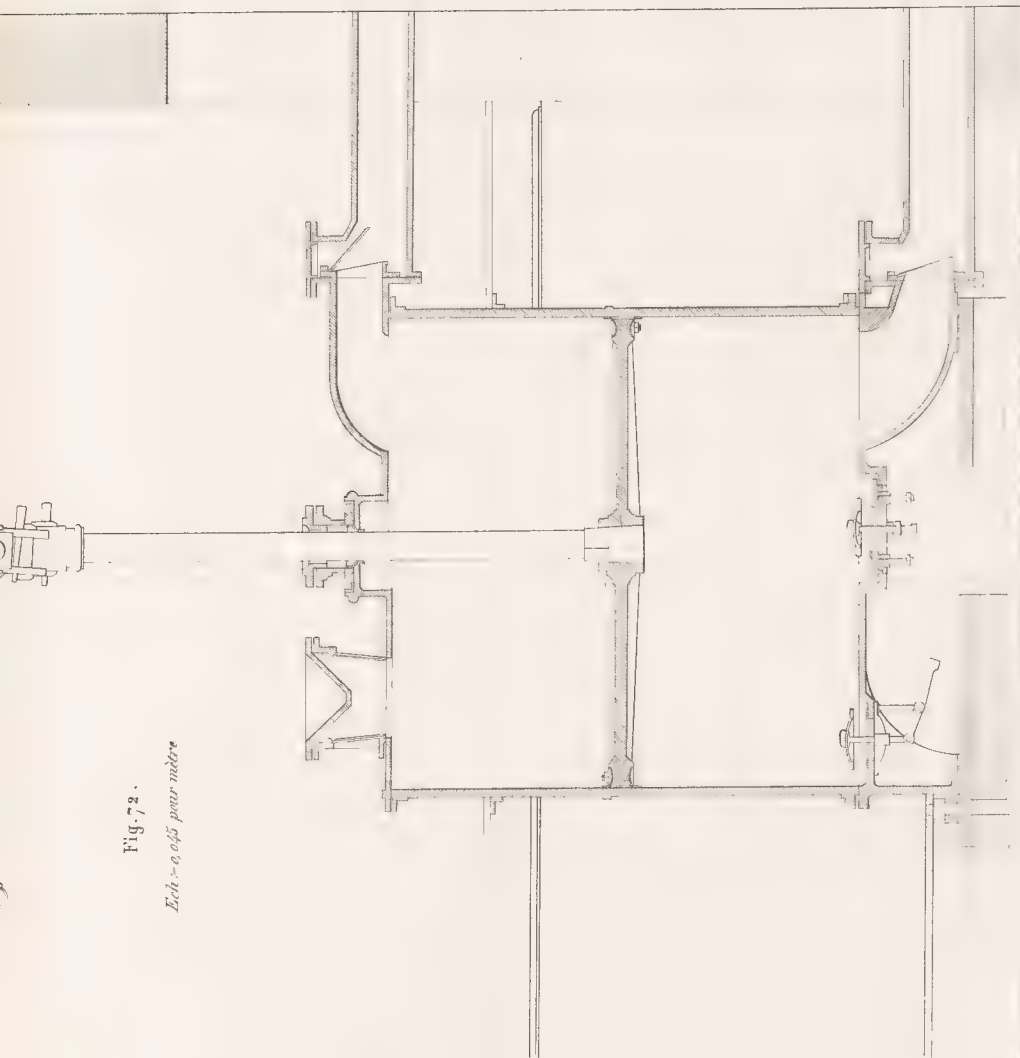


Fig. 72.

Echelle 1/2 pour intérieur



70-B-4488

THE GETTY CENTER
LIBRARY



Fig. 64

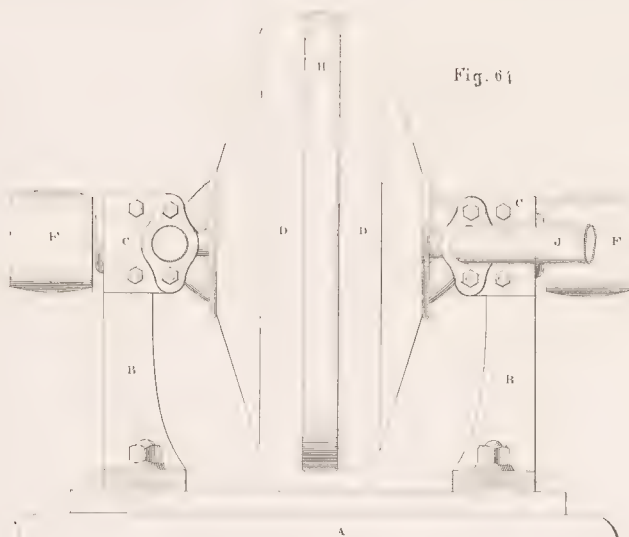
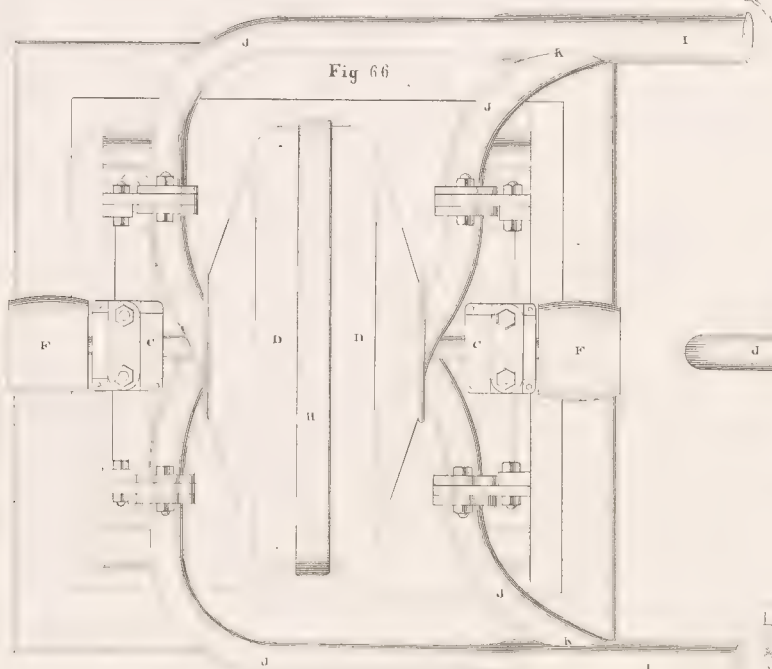


Fig. 66



Système E.L.

E.L.

et de l'impression

Fig. 68.

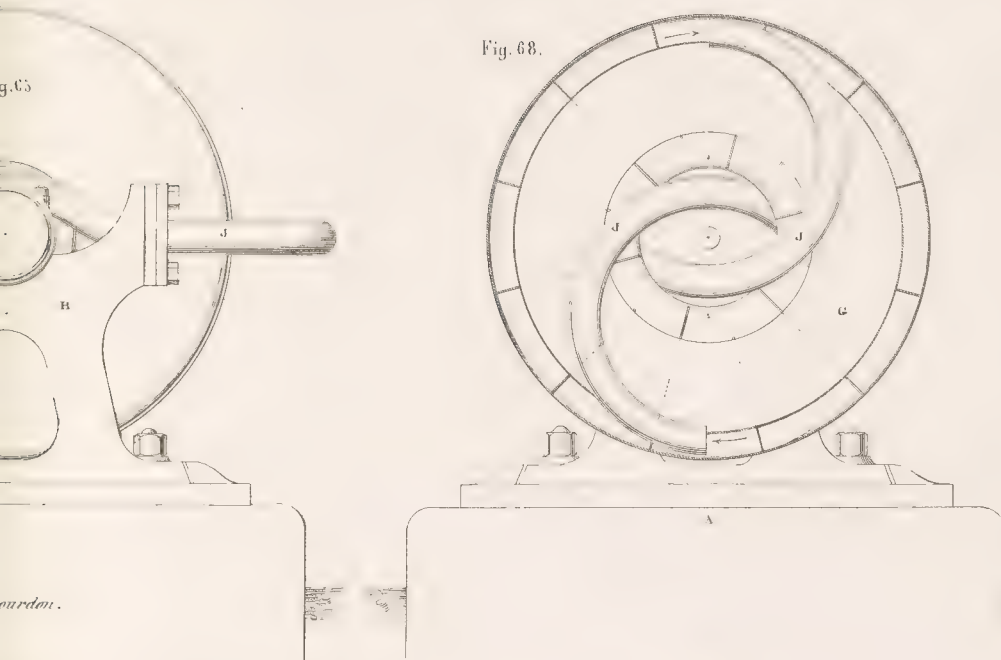


Fig. 69.

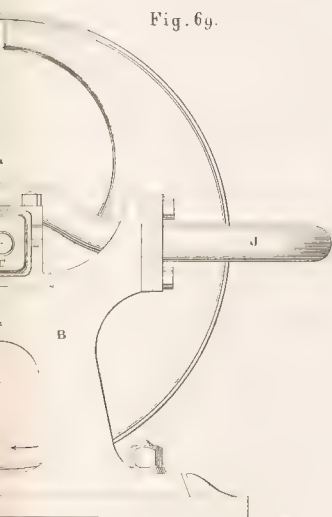
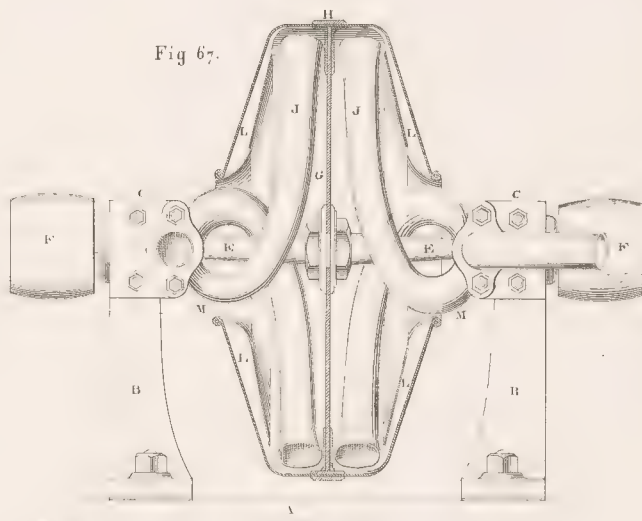


Fig. 67.

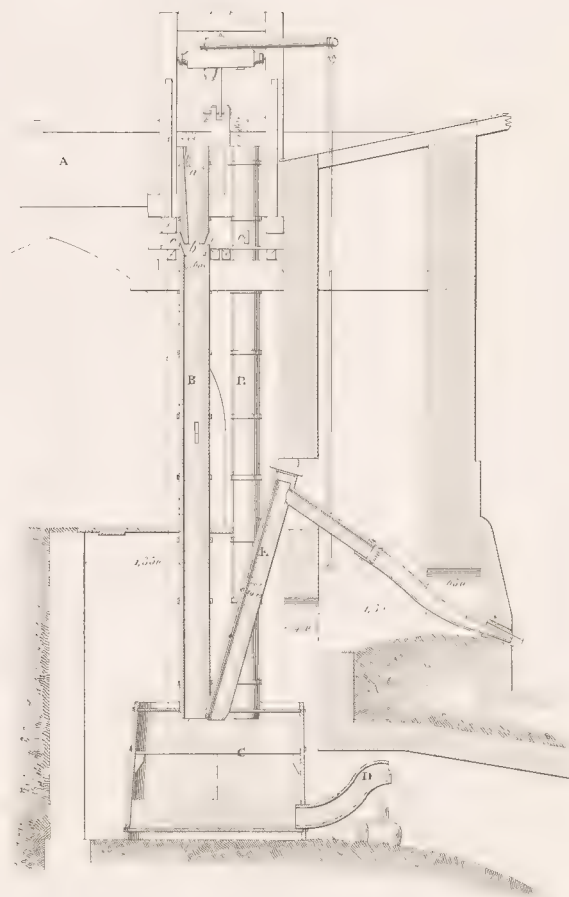


90-B. 4488

THE
LIBRARY



Fig. 59.



Echelle 1/2 mètre

Fig. 60.

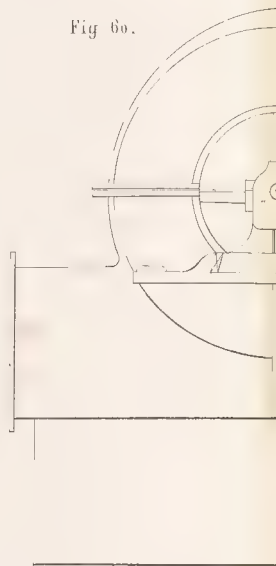
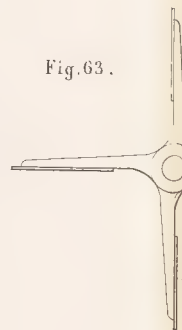


Fig. 63.



Echelle

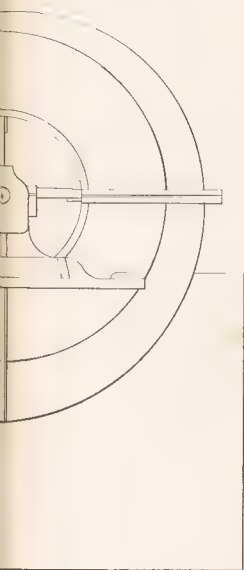


Fig. 61 .

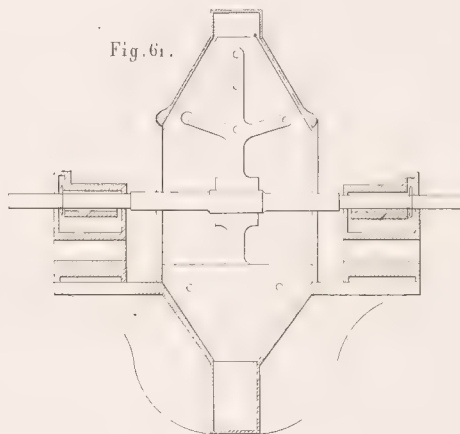
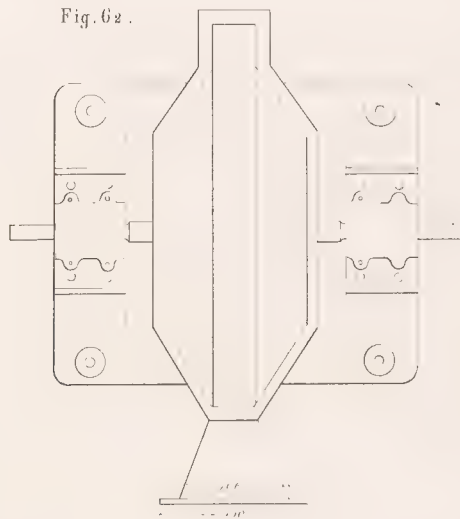


Fig. 62 .



90-B-4486

THE COPY CENTER



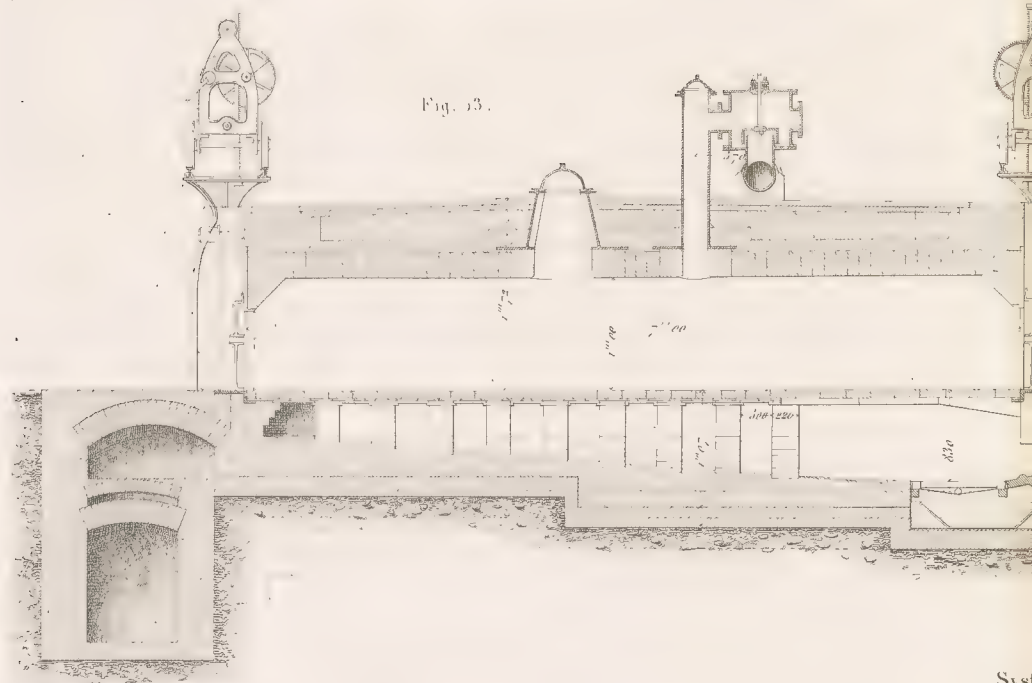


Fig. 53.

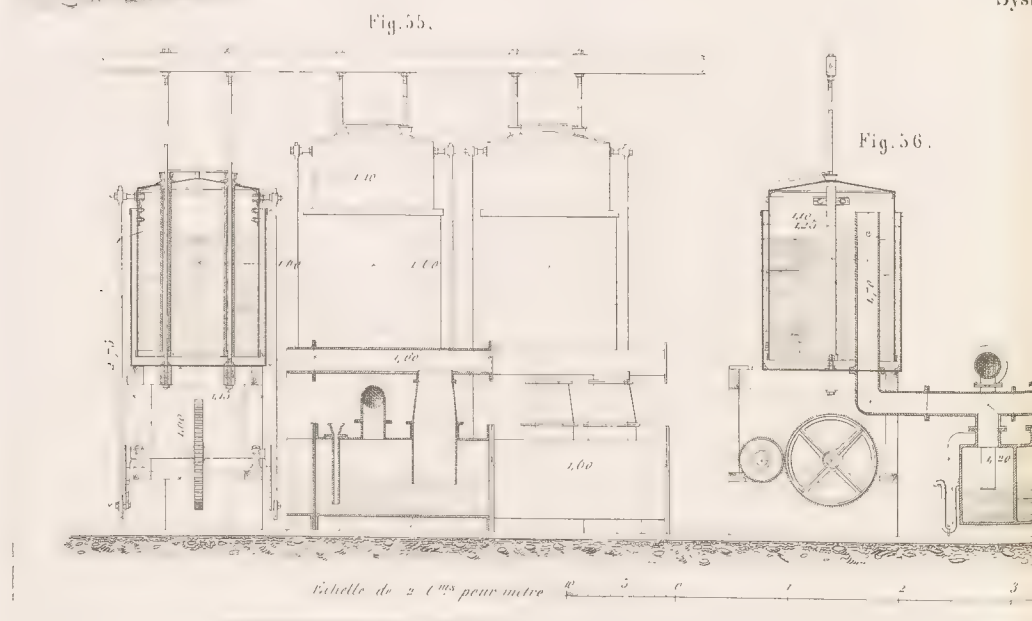


Fig. 55.

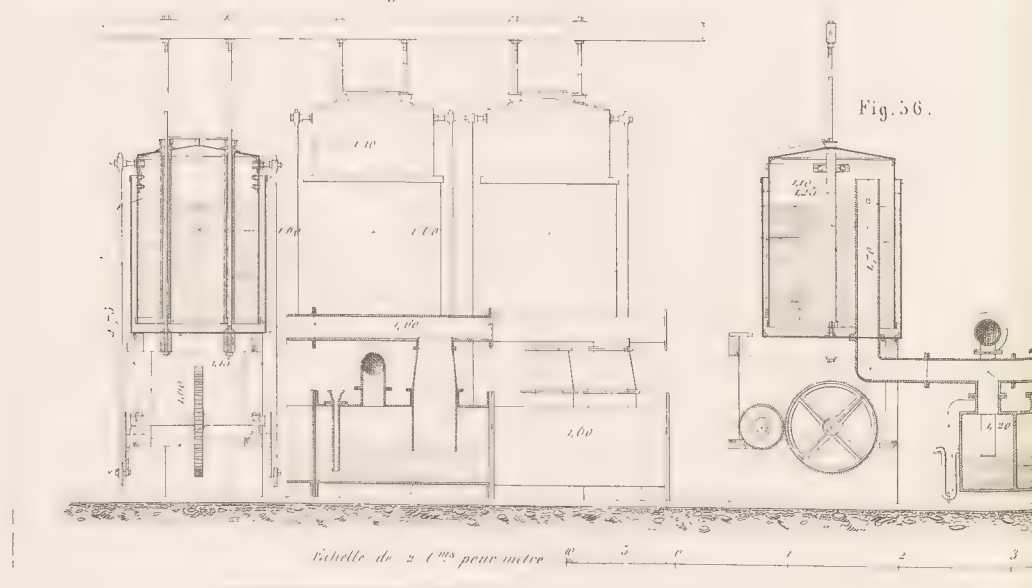
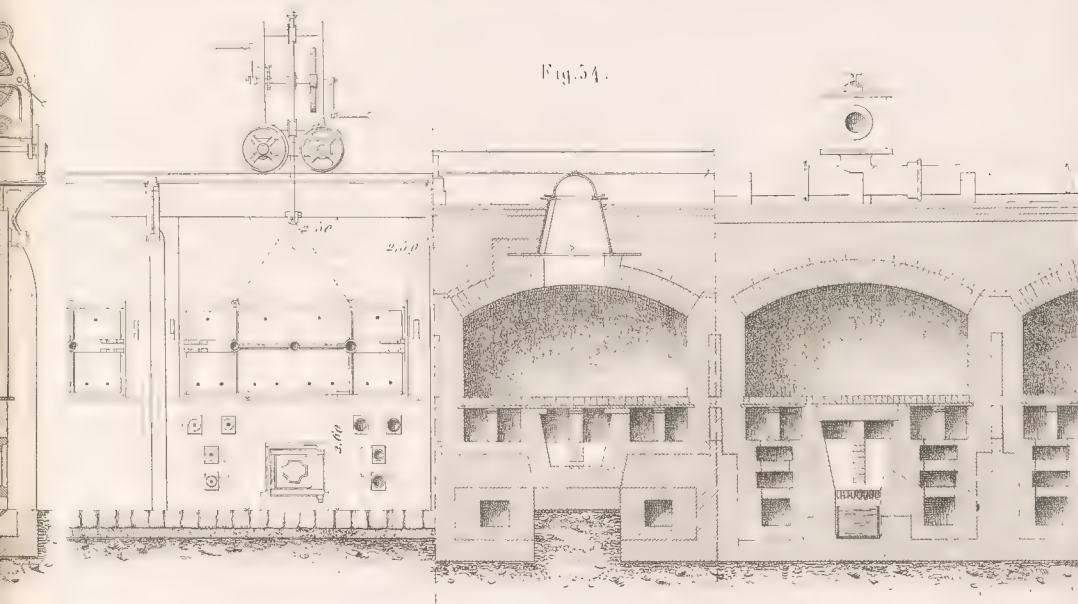


Fig. 56.

Echelle de 2 m^{ms} pour metre

Fig. 54.



ème Knab.

Fig. 57.

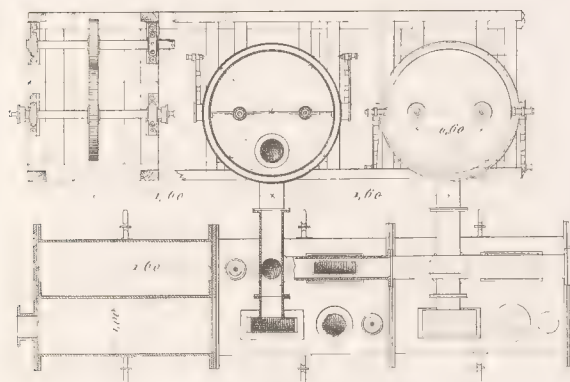
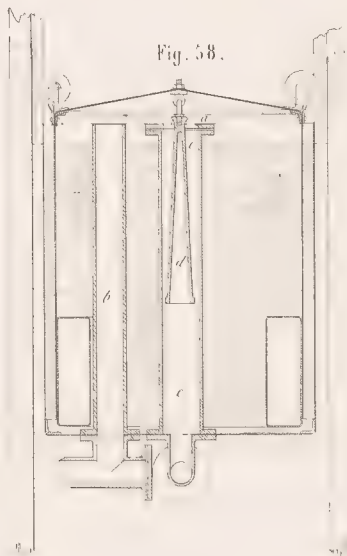


Fig. 58.



8 mètres

90-B-4488

STATE DEPT CENTER
EX-11



Fente.

Système

Fig. 50.

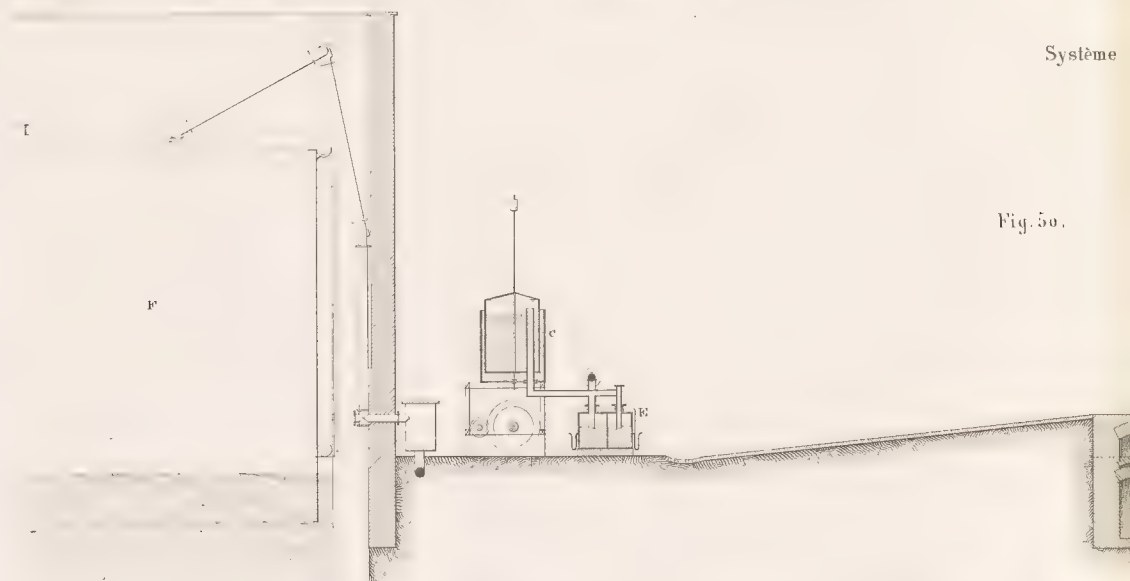


Fig. 52.

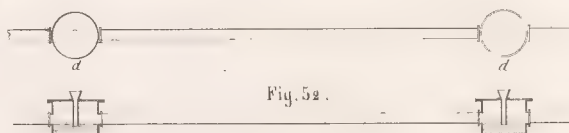
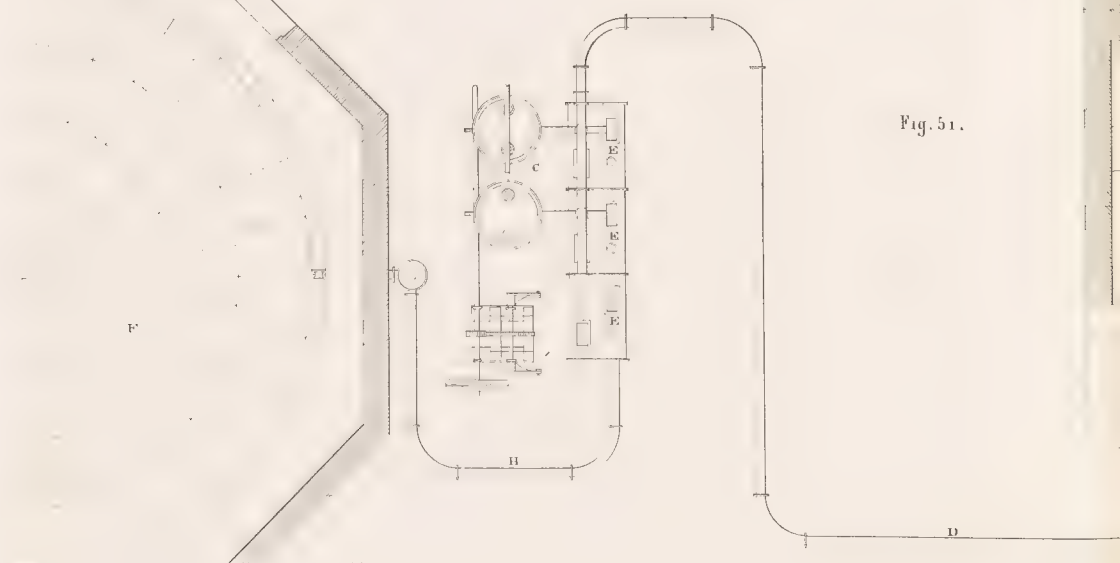
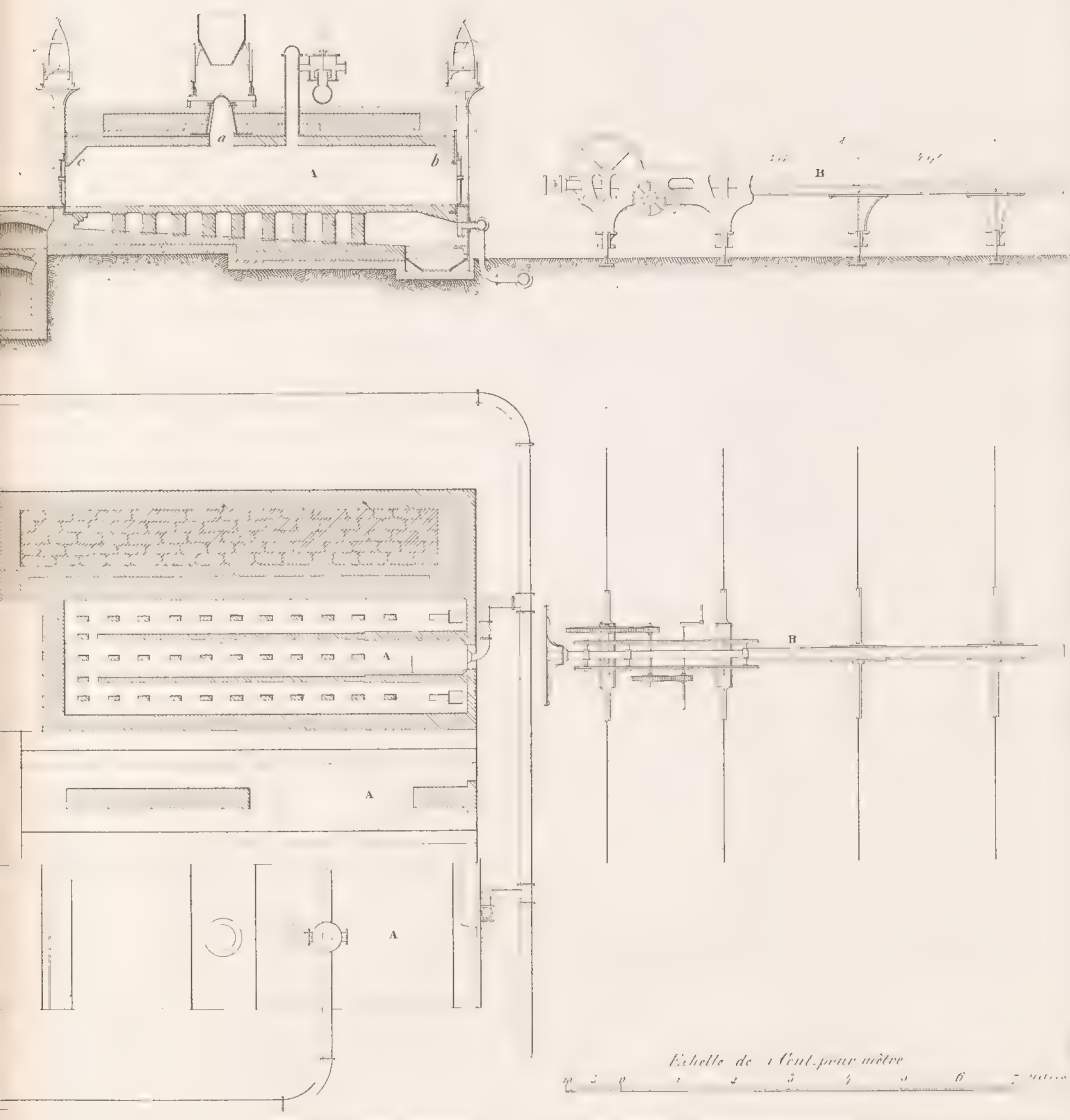


Fig. 51.



Knab.



70-B-4488

THE GETTY CENTER
LIBRARY



Ponté.

Fig 44

AB

Fig 45

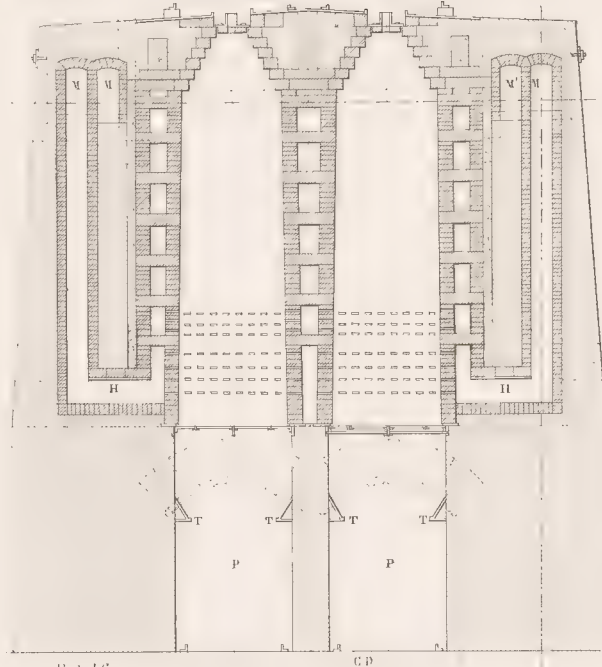


Fig 46

CD

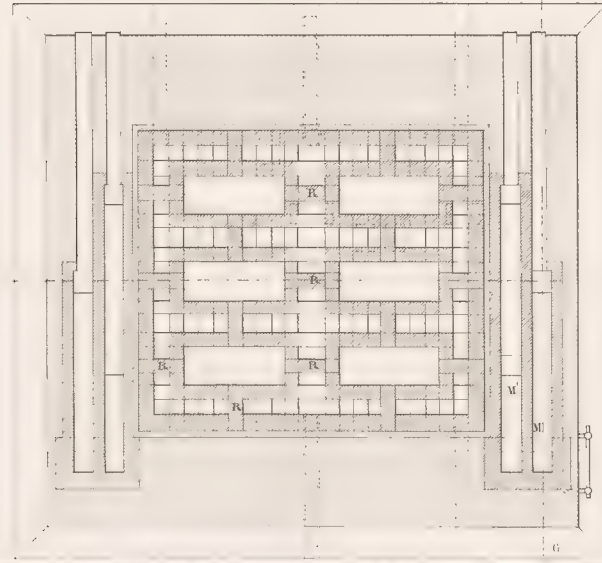


Fig 49

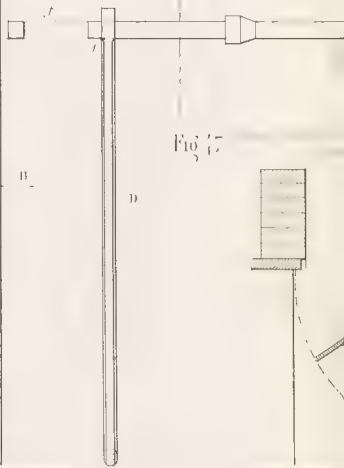
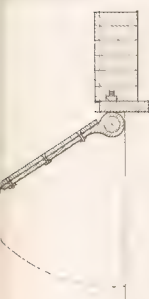
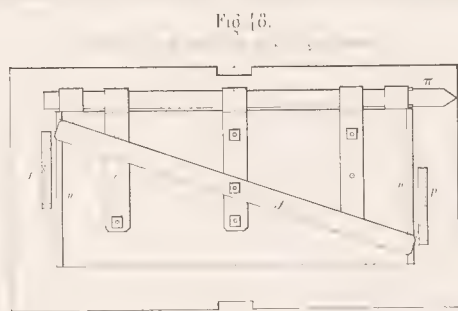
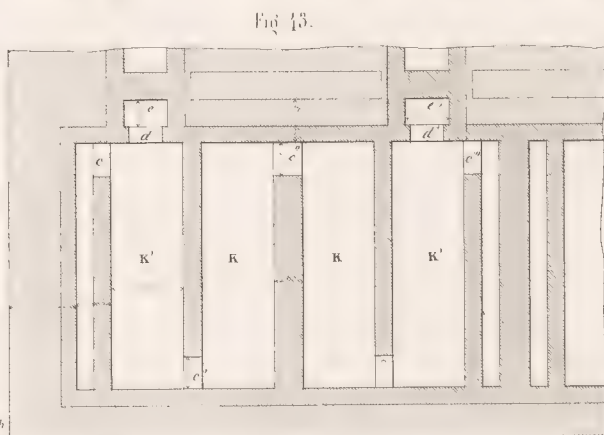
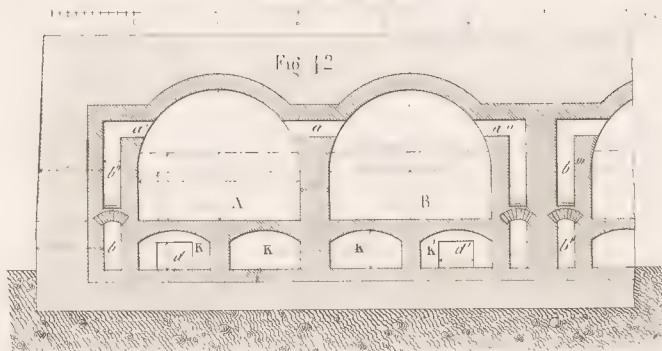
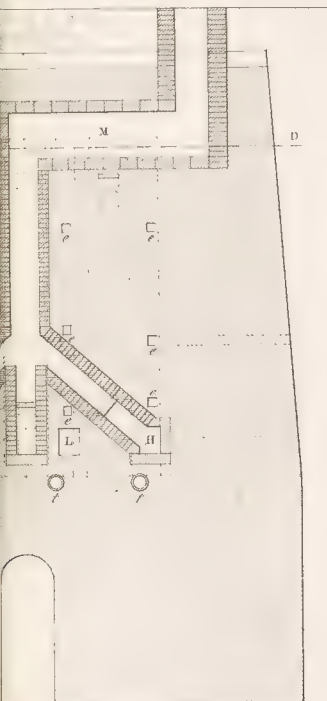


Fig 47



Fig 47



90-B-4488

THE GETTY CENTER
LIBRARY



Fonte.

Fig. 35

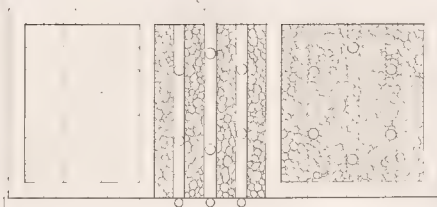


Fig. 34

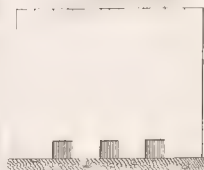


Fig. 36

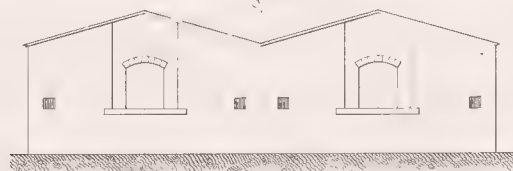


Fig. 36

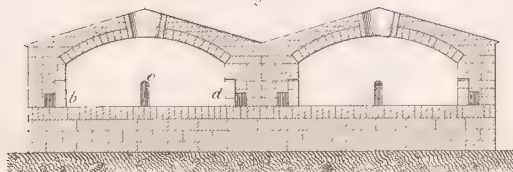
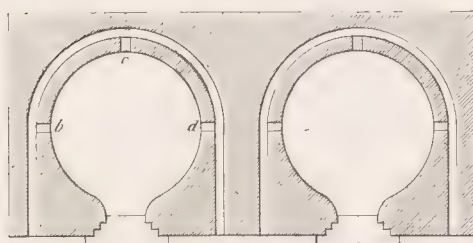


Fig. 37



CARBONISATION

Fig. 38 coupe verticale suivant la

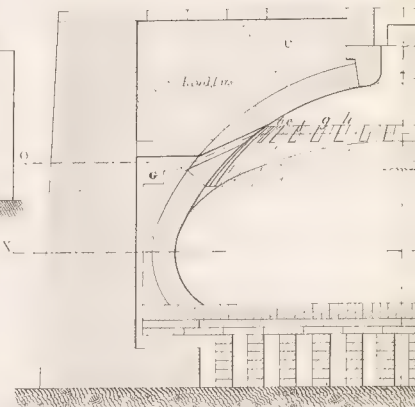


Fig. 38

Plan à coupe horizontale a de la fig.

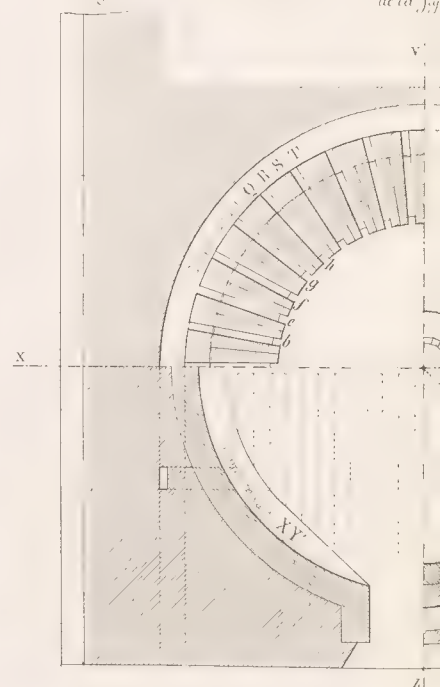
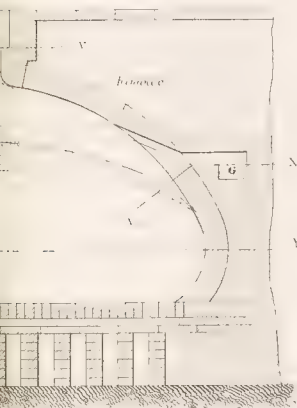


Fig. 38 et coup.

9.
d'après le plan p. 11.



différentes hauteurs
30

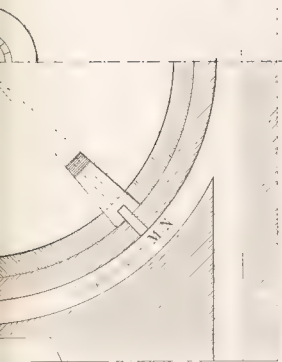
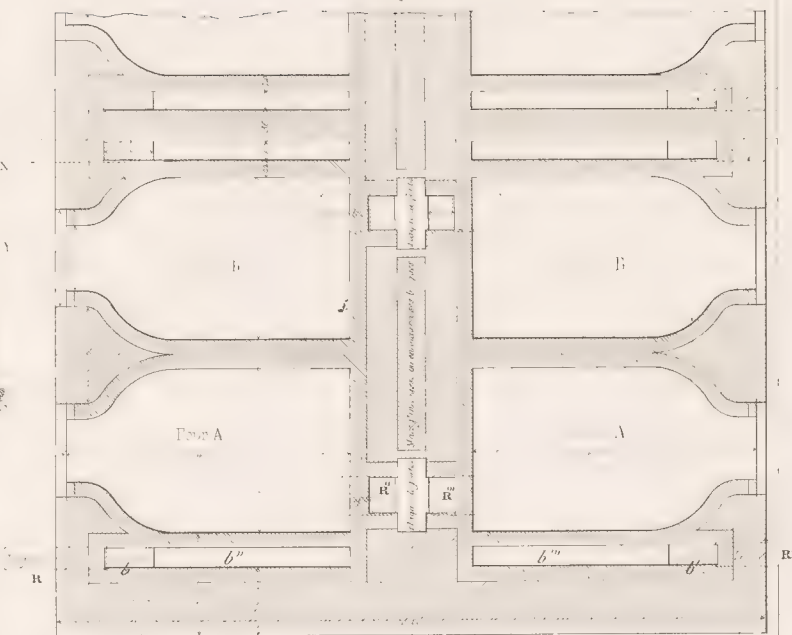


Fig 40



Grands Fours accouplés à sole chauffée
(1^{re} système de Carbonsaumur)

Fig 41

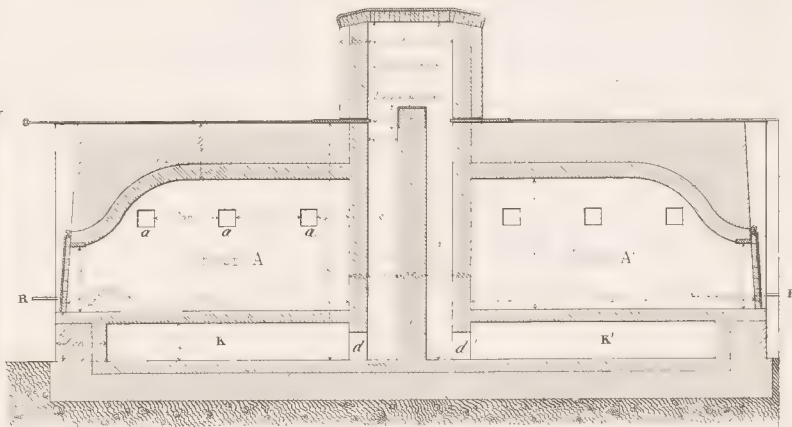


Fig 41 et 42 Echelle de 1/200

70-B-4488

THE GETTY CENTER

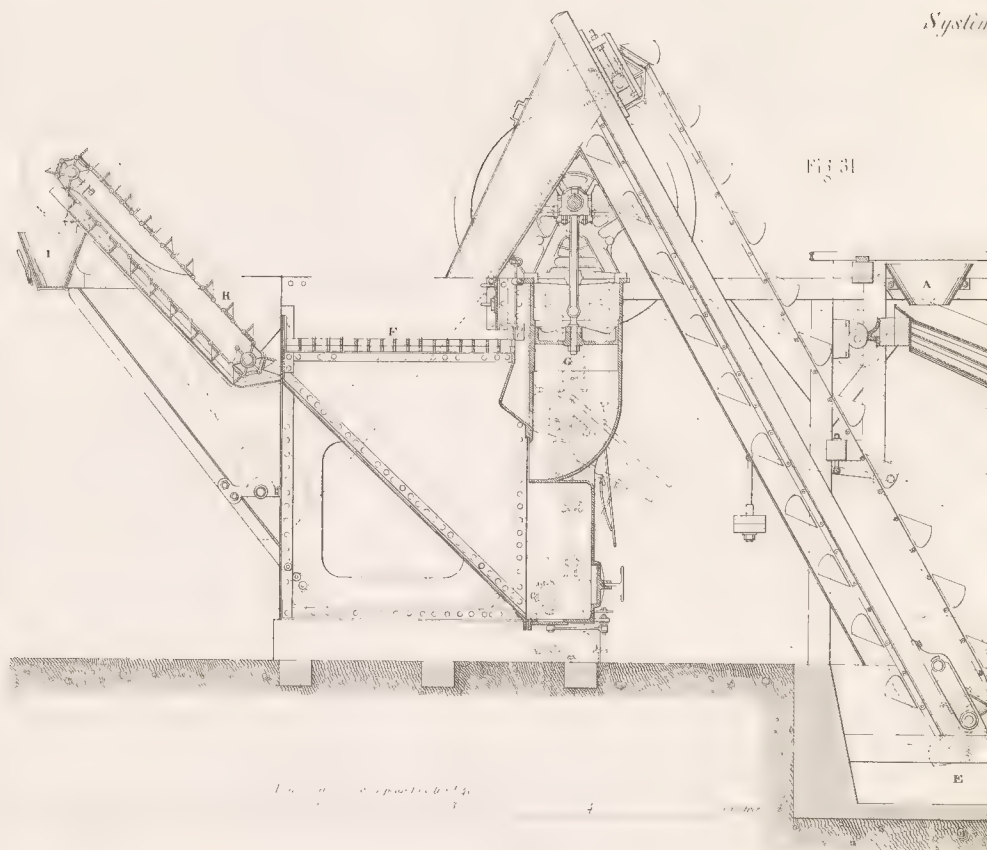
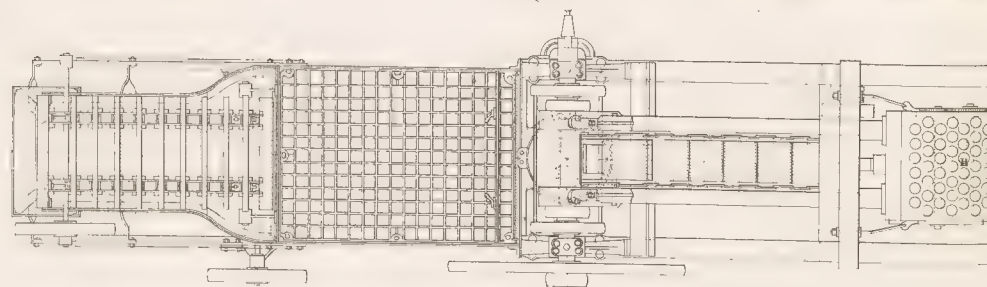


Fig 32.



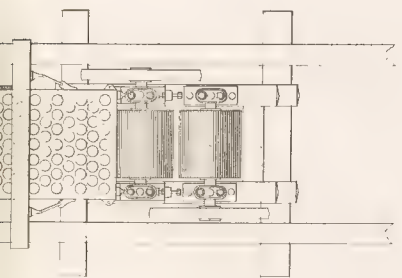


Fig. 1



Fig. 50



90-B-4488

THE CITY OF NEW YORK
19



Fig 12



Fig 13.



Fig 14

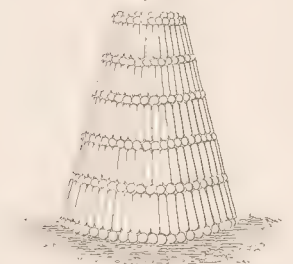


Fig 15

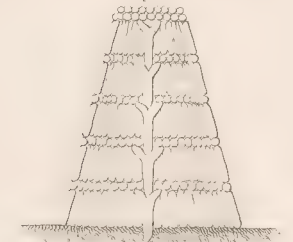


Fig 17

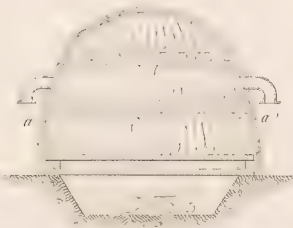


Fig 22

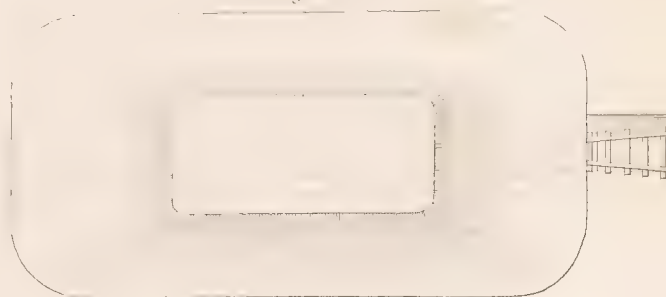


Fig 25

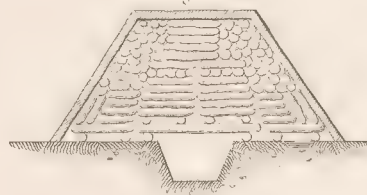


Fig 24.

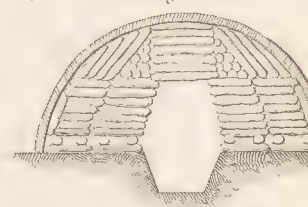


Fig 20

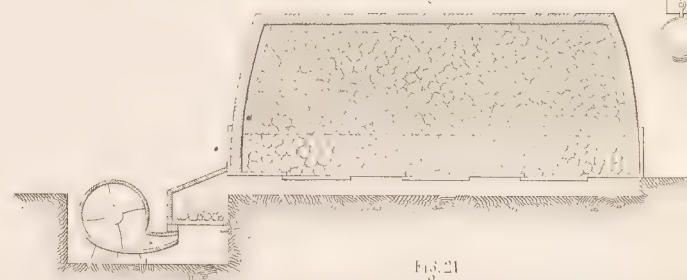
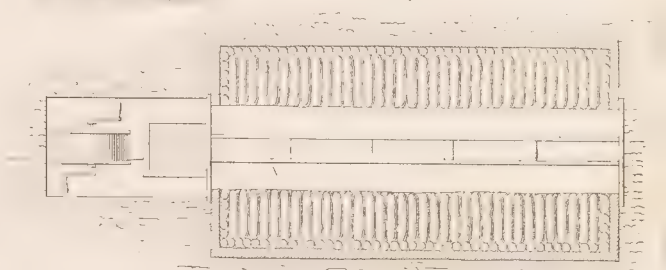
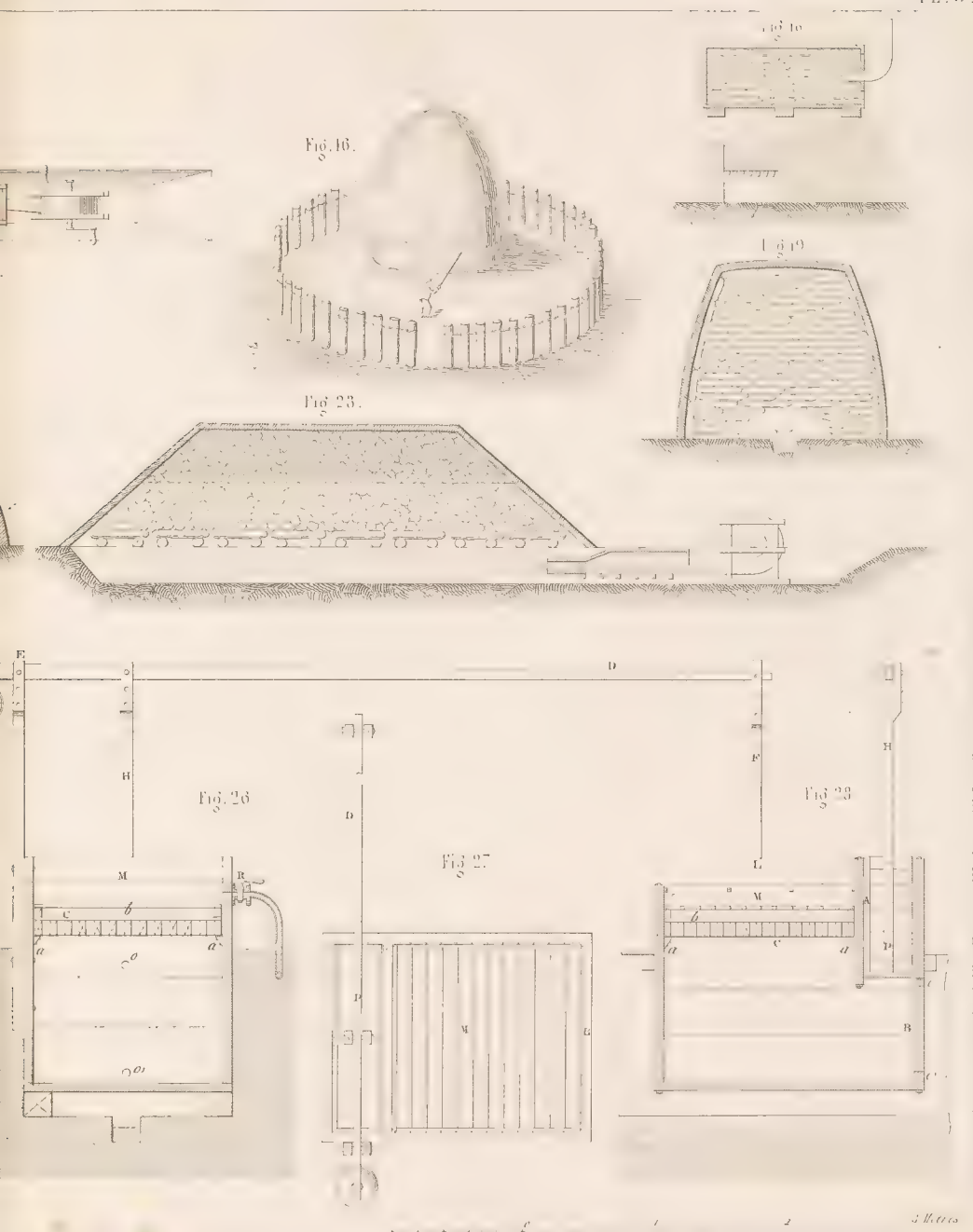


Fig 21



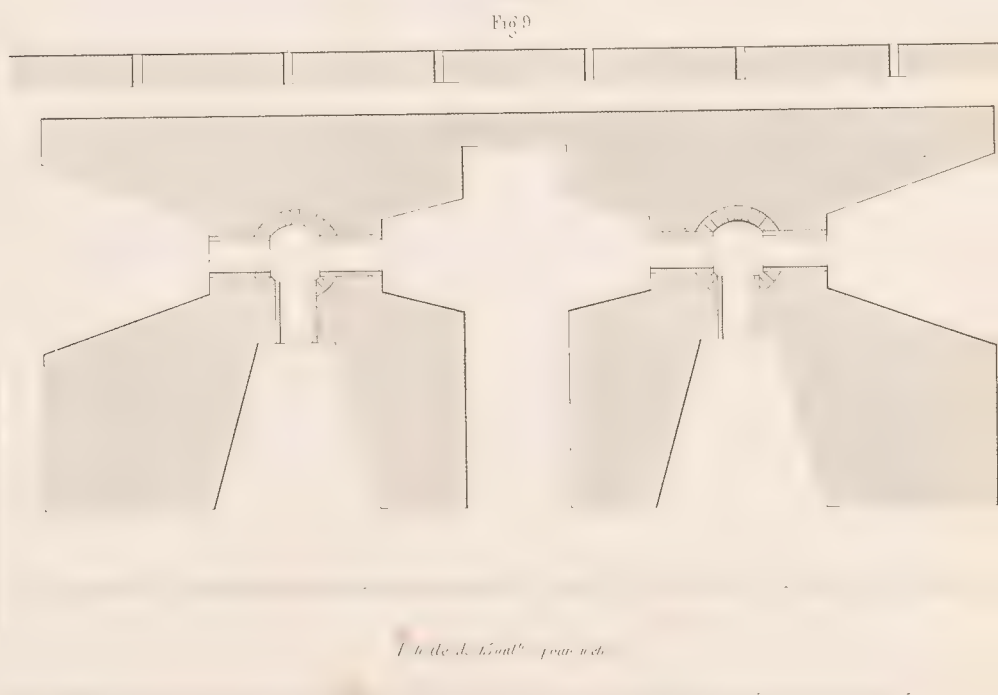
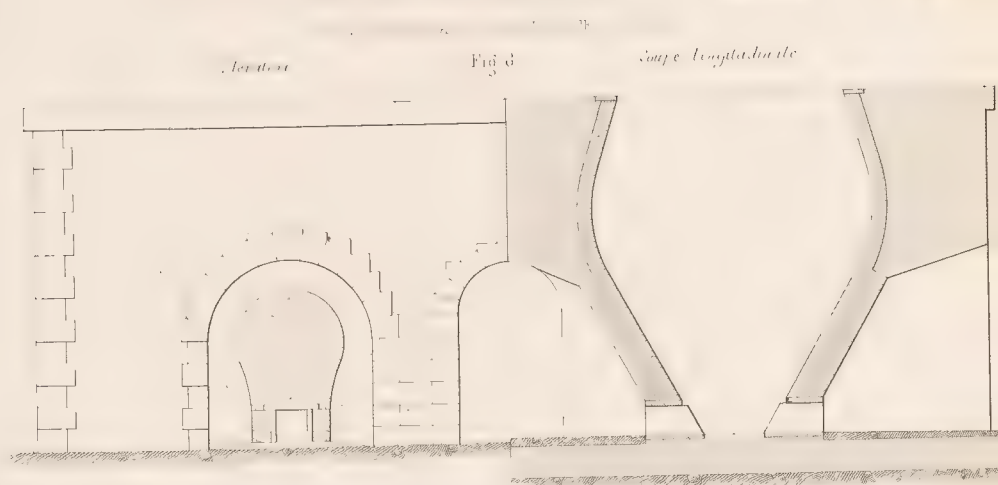


70-8-448

THE CITY CENTER
OF

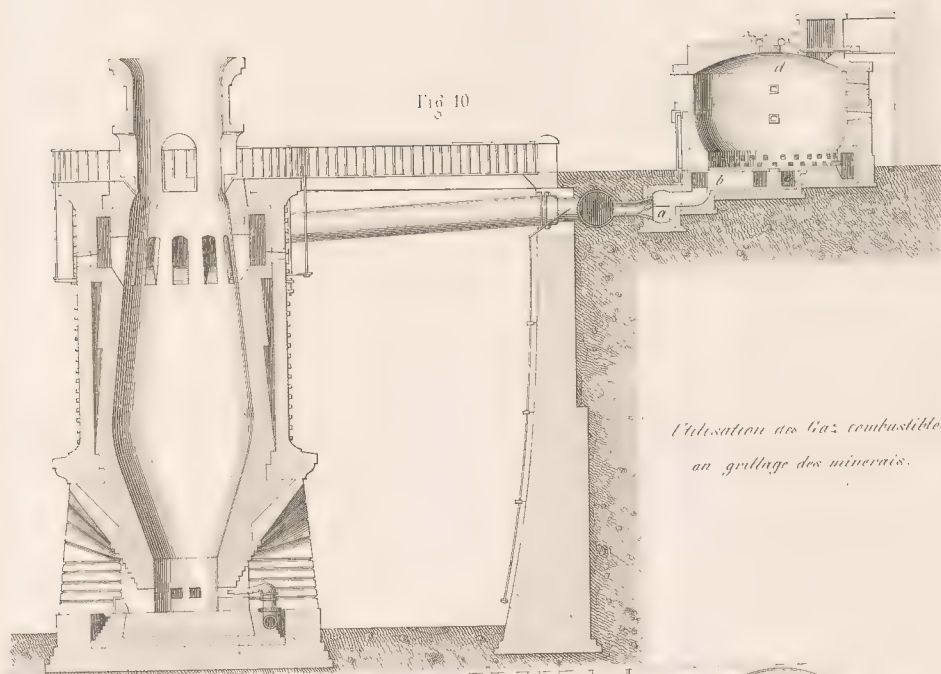


Fonte



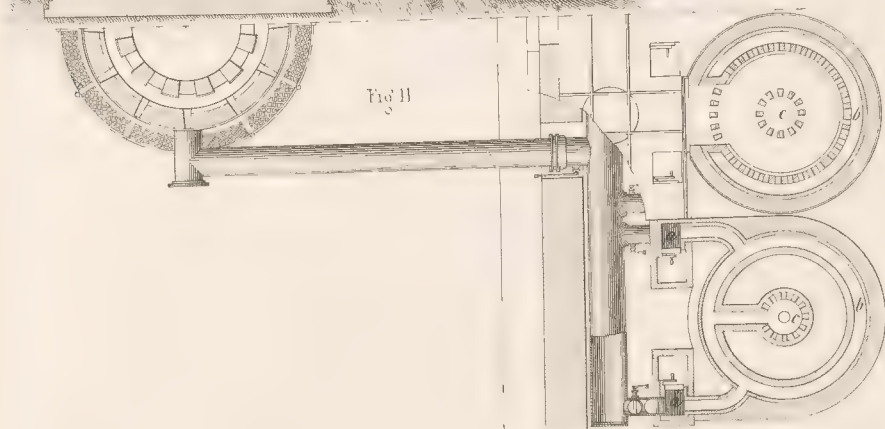
F. de J. Kout'

Fig 10



*L'utilisation des Gaz combustibles
en grillage des minerais.*

Fig 11



90-B-4488

THE CITY CENTER
LIV. INC.



Ponte

PRÉPARATION

Lesat m
Fig 1
SA



low

Lesat m
surant AB

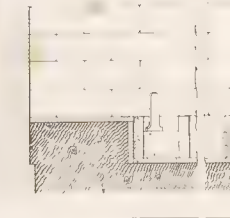
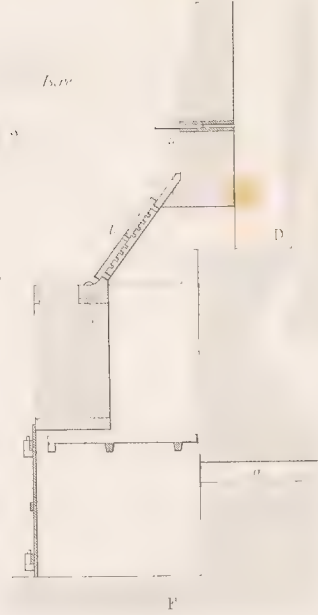
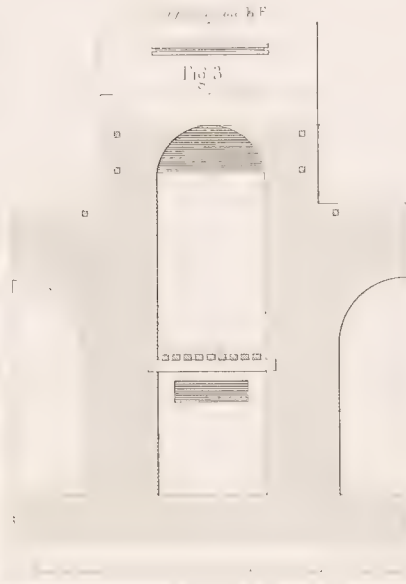
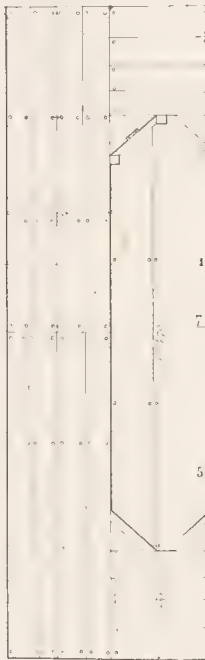
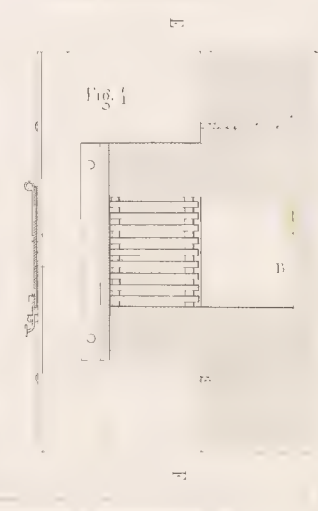


Fig 3
SA



Lesat m
surant CD



Etabl^e et im

Fig. 5.

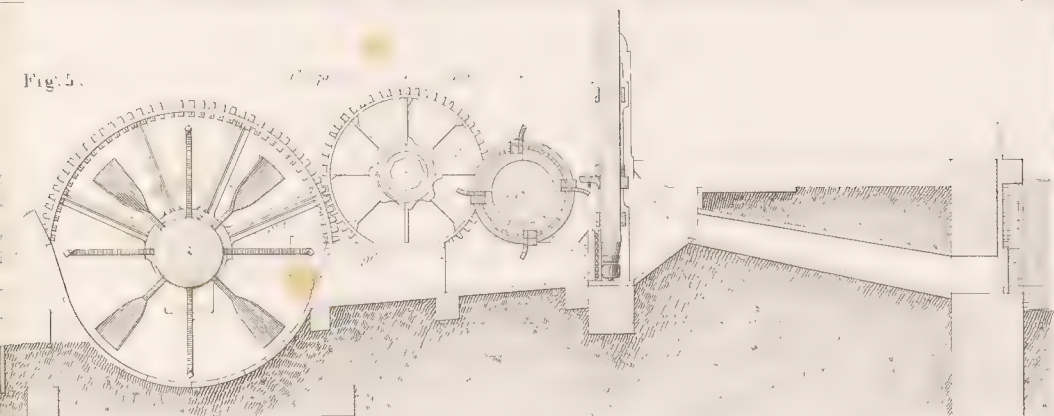


FIG. 6

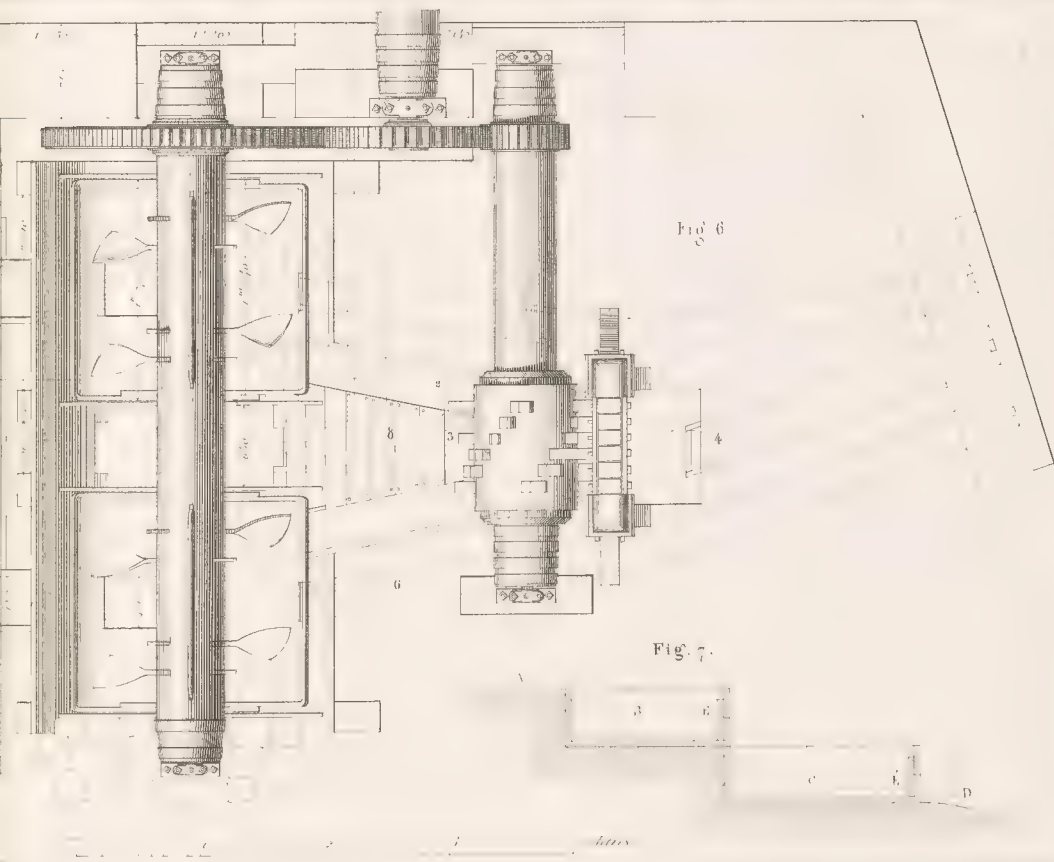


Fig. 7.

70-8 4488

THE JIMMY CENTER
LIBRARY



Fig. 46.

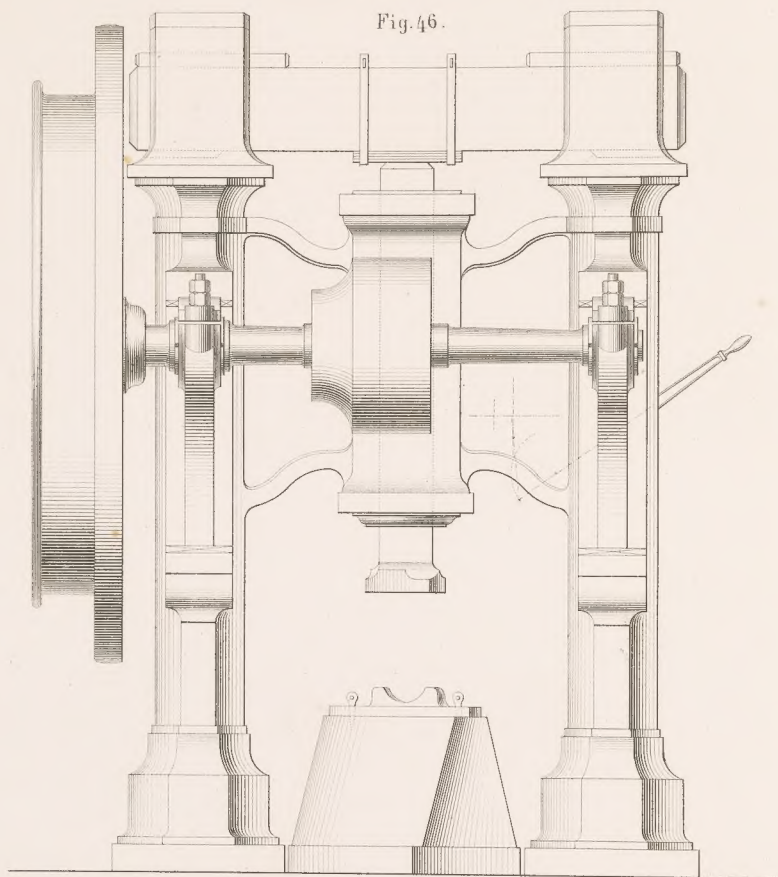
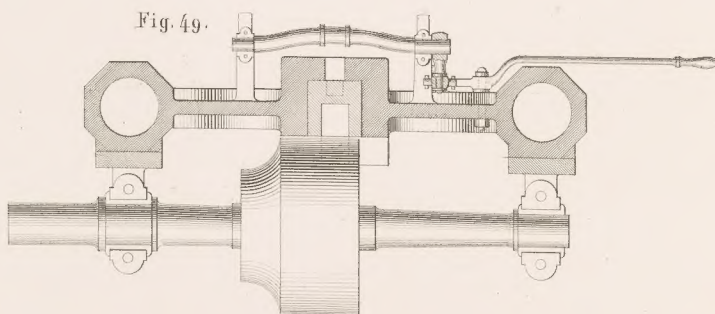


Fig. 47.



Fig. 49.



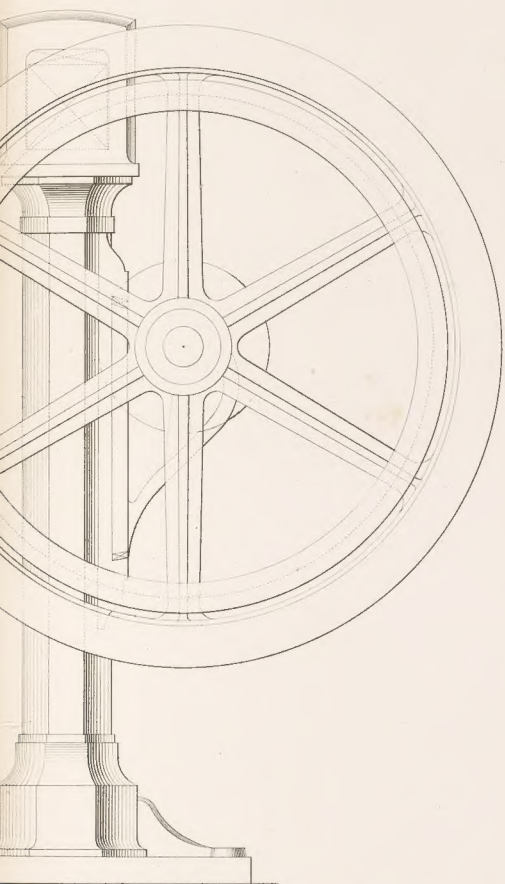


Fig. 48.

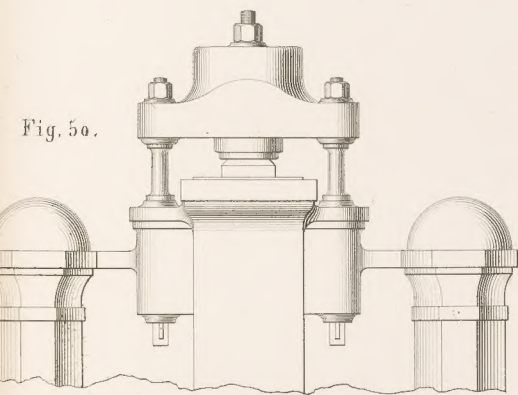
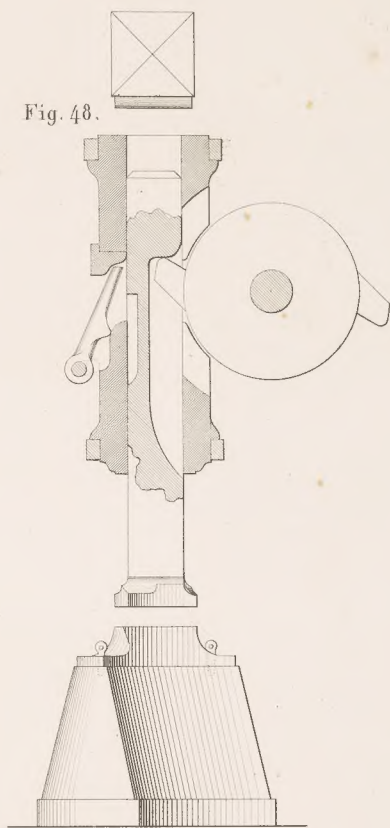


Fig. 50.

Système Farcot.

Echelle = $\frac{1}{40}$
1 2 3 4 5 6 7 8 9 Mètre

90-B-4488

THE GETTY CENTER
LIBRARY